SOIL SURVEY OF

Jackson County, Arkansas

United States Department of Agriculture
Soil Conservation Service
In cooperation with
Arkansas Agricultural Experiment Station

Issued December 1974

Major fieldwork for this soil survey was done in the period 1964–69. Soil names and descriptions were approved in 1971. Unless otherwise indicated, statements in the publication refer to conditions in the county in 1970. This survey was made cooperatively by the Soil Conservation Service and the Arkansas Agricultural Experiment Station. It is part of the technical assistance furnished to the Jackson County Soil and Water Conservation District.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or they can be purchased on individual order from the Cartographic Division, Soil Conservation Service, United States Department of Agriculture, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

Locating Soils

All the soils of Jackson County are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the county in alphabetic order by map symbol and gives the capability classification and the woodland suitability group of each. It also shows the page where each soil is described.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and those who work with farmers can learn about use and management of the soils for crops from the soil descriptions.

Foresters and others can refer to the section "Use of the Soils for Woodland," where the soils of the county are grouped according to their suitability for trees.

Game managers, sportsmen, and others can find information about soils and wildlife in the section "Use of the Soils for Wildlife."

Community planners and others can read about soil properties that affect the choice of sites for dwellings, industrial buildings, and recreation areas in the section "Use of the Soils in Town and Country Planning."

Engineers and builders can find, under "Use of the Soils in Engineering," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

Scientists and others can read about how the soils formed and how they are classified in the section "Formation and Classification of the Soils."

Newcomers in Jackson County may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the information about the county given in the section "General Nature of the County."

Cover: **Area of Amagon and Forestdale silt loams planted to cotton. Enders stony silt loam, 12 to 25 percent slopes, and Linker-Hector complex, 12 to 40 percent slopes, are on the wooded hillsides in the background.**

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SOIL SURVEY OF JACKSON COUNTY, ARKANSAS

BY WARREN A. GORE, SOIL CONSERVATION SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH THE ARKANSAS AGRICULTURAL EXPERIMENT STATION

JACKSON COUNTY is in northeastern Arkansas (fig. 1). It is irregular in shape and is about 9½ to 31½ miles wide and 36 miles long. It is bounded on the east by Craighead, Poinsett, and Cross Counties; on the south by Woodruff and White Counties; on the west by White and Independence Counties; and on the north by Lawrence County. The Black and White Rivers form the northwest boundary. According to United States census reports, the approximate area is 402,304 acres, or 628.6 square miles.

In 1970, the population was about 20,450. Newport, the county seat and main trading center, had a population of 7,725. Tuckerman, the next largest town, had a population of 1,731.

The area economy is based on farming. Except for a few manufacturing plants in the vicinity of Newport and sand-and-gravel dredging companies, most local businesses provide farm services.

General Nature of the County

This section describes farming, physiography, drainage, water supply, and climate in Jackson County. Statistics in the discussion of farming are from the 1969 Census of Agriculture.

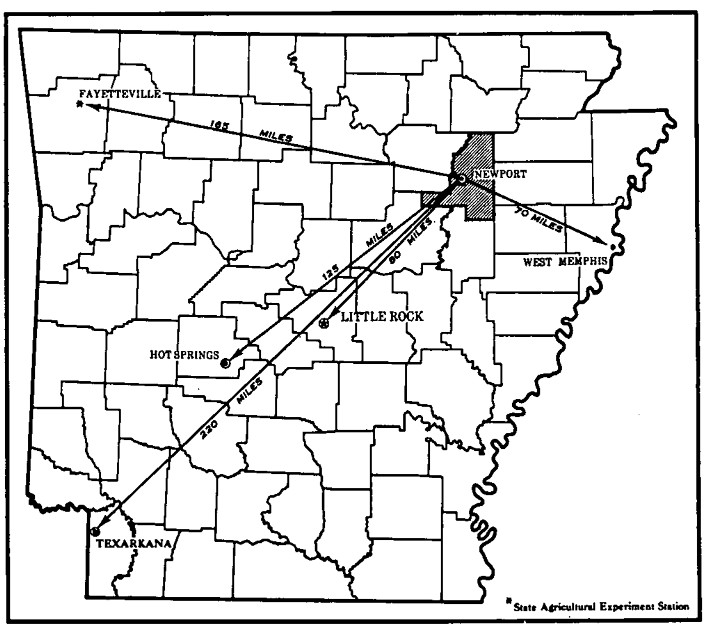

Figure 1.—**Location of Jackson County in Arkansas.**

A hilly area in the extreme western part makes up about 10 percent of the county. Its elevation ranges from about 200 feet at Oats Creek on the south county line to 820 feet about 5 miles west of Olyphant. About half of the acreage in this area is suitable for cultivation or improved pasture, but erosion is a moderate to very severe hazard. The soils in the other half are too steep or too stony for intensive use.

About 90 percent of the county is level or undulating. The soils formed in alluvial sediment that in places is capped with windblown silt a few inches to several feet thick. The alluvial area extends from the flood plains of the Black and White Rivers eastward across the county. The elevation of this area ranges from about 190 feet where the White River leaves the county to about 255 feet atop natural levees in the northwestern part of the county.

Most soils in the alluvial area contain a moderate to large amount of plant nutrients, and some of these soils are among the most productive in the State. On a small part of the acreage along the Black and White Rivers, the soils are subject to winter and spring flooding. This normally does not prevent farmers from growing warm-season crops. Except for some undulating soils on a high, nearly continuous levee that crosses the county from north to south, most soils in this area are level. Runoff water drains away slowly or is ponded, except on the high natural levee. Restricted surface drainage is the main limitation.

Farming

Farming in Jackson County began on soils that had good natural drainage, on natural levees above the river flood plains, and on hills in the western part of the county. Cotton was the main cash crop. Most of the better drained areas were cleared for cotton, and the steep, stony, or wet areas were left in woodland. The inhabitants still depend mainly on farming for income, but cropping systems have become more diversified.

Since acreage allotments were placed on cotton, its importance has declined. As machinery replaced livestock as a source of power, corn and other feed crops also declined in importance.

In the hill area, forage crops, beef cattle, and broiler chickens now provide most farm income.

Flood control and improved drainage outlets, improved crop varieties, and other results of modern technology

have led to the rapid expansion of cropping in the lowlands and a great reduction in woodland. Most of the lowlands have been cleared, and on most farms natural drainage has been improved for more reliable crop production.

Soybeans is the main crop in lowlands, but farmers that have allotments also grow cotton and rice. Grain sorghum and winter small grain are other important field crops, and some truck crops are grown. A few farmers keep herds of beef cattle; fish farming and poultry production are other enterprises on some farms predominantly used for row crops.

In 1969 about 92 percent of the county was farmland. The rest was wooded tracts, cities, and built-up areas.

Soybeans, cotton, rice, wheat, sorghums, oats, and peanuts are the main crops. According to the U.S. Census of Agriculture, the acreage of principal crops harvested in 1969 was as follows:

Crops:	*Acres*
Soybeans (for beans)	219,690
Cotton	35,399
Wheat (for grain)	5,353
Sorghum (for grain)	4,306
Hay	3,672
Other small grain, including rice	20,687
Peanuts (for nuts)	156

The total number of cattle and calves on farms and sold in the county in 1969 was 20,108; of these, only 41 were milk cows. The number of hogs and pigs on farms and sold was 4,140; and of chickens more than 3 months old, 336,596.

The number of farms smaller than 100 acres and farms larger than 500 acres is increasing, while the number of farms between these acreages is decreasing. Between 1964 and 1969 the total number of farms increased from 888 to 935, and the average size decreased from about 411 to 397 acres.

Of 935 farm operators in the county, 362 were full owners, 285 were part owners, and 288 were tenants. Of these operators, 422 reported one or more days of work off the farm and 216 worked off the farm 100 days or more.

Farm-related industrial enterprises in the county are varied. They include cotton gins, compresses, and warehouses; seed-oil mills; grain and soybean elevators and dryers; and farm equipment and supply companies.

Most farms are a size that a family can work, with hired help utilized during peak season. Larger farms are run by workers under an owner, manager, or tenant. Tenants pay a fixed rent or percentage of the crop for use of the land. Most of the land is farmed by operators who have enough modern equipment to farm efficiently. Most farmers fertilize according to the needs of the crop, and many use chemicals for weed control.

Physiography, Drainage, and Water Supply

The Black and White Rivers are graded streams that have well-defined channels. The White River is navigable during most of the year; the Black River is intermittently navigable. The Black River flows south along the western edge of the county to its juncture with the White River near Jacksonport. From this point the White River flows generally south and leaves the county near the middle of the southern boundary. The flow is regulated by major flood control impoundments upstream from Jackson County. Both rivers provide recreational facilities for fishing, boating, and waterfowl hunting. They yield sand and gravel, fish, and mussel shells in commercial quantities.

The flood plains of both rivers form the approximate boundary between hilly uplands to the west and broad lowlands to the east. The many lakes, brakes, sloughs, and creeks in the flood plains provide excellent fishing and hunting and are also an important source of wood crops. There is an abundant supply of surface and ground water for irrigation.

The southwestern part of Jackson County is hilly uplands. In this area steep, stony hillsides rise from valleys of the White River and small tributaries. They rise 200 to 400 feet in less than 2 miles to an area of nearly level to rolling hilltops that forms the drainage divide between tributaries. The hilltops are remnants of a plateau, and most of the local relief is the result of geological erosion.

Surface water falls as much as 600 feet by way of Glaise, Oats, and Departee Creeks and other streams before reaching the level area of the White River flood plain. Ground water is insufficient for large-scale irrigation, but domestic water supplies come mainly from dug and drilled wells and ponds. Drilled wells yield the most dependable supply of drinkable water. Ponds and creeks furnish most livestock water supplies.

Soils of the hilly uplands formed chiefly in material weathered from local siltstone, sandstone, and shale. Most of the acreage suited to farming is on the higher parts of the landscape, where slopes are generally less than 12 percent and local differences in elevations are less than 50 feet. This acreage is chiefly the Leadvale, Linker, Mountainburg, and Enders soils.

The dissected hillsides have slopes of 12 to 40 percent, except for a few near vertical bluffs. Differences in elevation range up to 400 feet or more. The soils on hillsides are the Mountainburg, Hector, Linker, and Enders soils.

An undulating natural levee divides the flood plains east of the Black and White Rivers from broad flats of older alluvium. This levee extends the length of the county except where it is broken by drainageways. Except for a few low escarpments, the slope is less than 8 percent and local differences in elevation seldom exceed 15 feet. Surface water collects in low places and flows to larger streams through a system of artificial channels, or through improved channels of natural drainageways to Village Creek and the Black and White Rivers. The main soils of the natural levee are Bosket, Dexter, and Dundee soils.

East of the high natural levee is a broad alluvial flat, capped in places by windblown sediments. This flat covers about half the land area of the county. The general slope is about 1 foot per mile in a southerly direction, but the predominantly level landscape is broken by old, abandoned river channels marked by narrow escarpments 5 to 15 feet high. Crowley, Hillemann, Jackport, Foley, Calhoun, and Lafe soils are the major soils in this area.

Surface water drains from the area through a network of artificial drainageways and improved channels of natural drainageways that empty into Village Creek, Bayou DeView, and Cache River, which follow the aban-

doned channels of large rivers. These streams are shallow and sluggish where their channels have not been improved.

There is a good supply of ground water in this area. Adequately spaced wells 12 inches in diameter, drilled 75 to 150 feet deep, yield about 2,000 gallons per minute of fair- to good-quality water for irrigation.

Climate [1]

Jackson County, in the northeast quadrant of Arkansas, is a level to undulating plain, except for the rolling westernmost finger of the county, where wooded hills rise several hundred feet above the plain. The topography thus offers little to complicate seasonal weather patterns. The relatively treeless, predominantly cultivated plain provides little hindrance to windflow. Surface wind velocity is somewhat greater than on more rugged, wooded terrain.

The climate of Jackson County, like that of all of Arkansas, is one of generally warm summers and mild winters. The county, however, has experienced most types of continental weather. For more than half the year, it is within an area of storm tracks or is exposed to frontal varieties of weather. Table 1 is a summary of temperature and precipitation data recorded at Newport, which is considered representative for the county.

Winter is the season of widest weather extremes. Winter storms and outbreaks of polar and even arctic weather are common, though these intense periods of cold and snow are of short duration. Overall, winters are relatively mild, and outdoor work can be done during much of the winter season.

Spring is the season of the most abrupt and violent weather changes. Strong frontal passages are often accompanied by turbulent, even tornadic weather patterns and high-intensity rains.

Summers are long, warm, and frequently hot and have high dewpoints and high humidity brought in from the Gulf of Mexico. Evaporation from the numerous streams, lakes, and the many flooded rice fields contributes to a somewhat higher humidity than would otherwise be the case. Relative humidity averages about 70 percent during the year. The combined warmth and humidity is likely to be uncomfortably high from mid-May to mid-September.

Days are warm and nights are cool in fall. This is the driest season and commonly the most pleasant. Prewinter cold fronts and sharp drops in temperature occur late in October and in November, but these are not usually characterized by significant turbulence as in spring.

Temperature extremes in Jackson County reveal a wide range of weather types in the area. Winter temperatures generally average above freezing. Minimum temperatures are consistently below freezing for about 1 month, in January. Nighttime temperatures are occasionally in the teens, and record extremes are below zero for the 3 winter months. In contrast, summers normally have 60 or more days in which temperatures are 90 degrees or higher, mainly in July and August. Summer temperatures can be expected to reach 100 degrees or higher for about 6 days each year, but such high temperatures are not experienced every year. Minimum summer temperatures generally range from 65 to 75 degrees. From late in May to early in September, only a few cold fronts reach the area, and rarely do they bring dry air masses into the county.

Precipitation, which averages a little less than 50 inches per year, is generally adequate for most crops. It is fairly evenly distributed throughout the year. March, April, and May are the wettest months and have a normal total of about 15 inches of precipitation. August through October is the driest season, but even then about 10 inches of rainfall can be expected in a normal year. Warm frontal systems, or those associated with wintery low pressure systems approaching from the southern plains or the Gulf of Mexico, are the most reliable sources of moisture. A single storm can bring as much as 2 to 5 inches of precipitation. Snowfall averages about 4 inches per year and is a negligible source of moisture. Snow generally melts within a few hours, and frequently melts as it falls. Sleet and freezing rain are infrequent, but can cause serious damage to evergreen trees and shrubs; otherwise, ice is of little consequence except as it disrupts transportation and utility services.

Convective clouds occur almost daily in summer, but rainfall from them is erratic and poorly distributed. Thus they are an unsatisfactory source of rainfall, and local droughts are frequent during the summer. In some years droughts severe enough to injure seedlings and shallow-rooted crops occur in the spring and early summer. In most years at least one drought lasting 15 days or more occurs in the period June through September. Such droughts damage, but do not kill, crops. Severe droughts 2 to 4 months long occur no more frequently than 1 year in 10. Such droughts cause severe crop damage of crop failure on such soils as Beulah soils, for example.

During the hottest part of the summer, evaporation of moisture from the soil can average about one-third of an inch per day. Thus, extended periods of high temperature and maximum sunshine can result in a large depletion of soil moisture. The moisture from a 1-inch summer rain can dissipate in 2 or 3 days. In spring, wetness is common. In low-lying areas crop planting can be delayed from 1 week to several weeks during a wet period. Occasionally late frost damages early planted crops, and some crops have to be replanted. The normally drier weather late in summer and in fall is favorable for harvesting, but it reduces the growth of many pasture plants and makes it difficult to obtain a stand of fall-seeded crops. Rarely do frosts come early enough in fall to damage the quality or reduce the yield of a crop.

The growing season is long. Almost three-fourths of the year is normally without temperatures low enough to damage plants. Sunshine averages slightly more than 70 percent of the possible amount. The average date of the last 32° F. temperature in spring is March 30, and the first in fall is October 31. The latest that a temperature of 32° has been recorded is May 3, and the earliest is October 7. The average date of the last 28° reading in spring is March 12, and that of the first in fall is November 13. The latest that a temperature of 28° has been recorded is April 14, and the earliest is October 22.

[1] By ROBERT O. REINHOLD, meteorologist in charge, National Weather Service, Little Rock, Ark.

TABLE 1.—*Temperature and precipitation data*

[From records at Newport, Ark.]

Month	Temperature: Average daily maximum	Temperature: Average daily minimum	Temperature: Two years in 10 will have at least 4 days with— Maximum temperature equal to or higher than—	Temperature: Two years in 10 will have at least 4 days with— Minimum temperature equal to or lower than—	Precipitation: Average total	Precipitation: One year in 10 will have— Less than—	Precipitation: One year in 10 will have— More than—
	° F.	° F.	° F.	° F.	Inches	Inches	Inches
January	50. 0	30. 1	74	4	4. 16	1. 27	7. 91
February	53. 8	32. 9	77	16	4. 11	1. 24	7. 16
March	62. 1	40. 3	84	20	4. 89	1. 82	8. 10
April	73. 7	51. 4	90	31	5. 06	2. 11	8. 44
May	81. 7	59. 3	93	43	5. 36	2. 20	8. 45
June	89. 6	66. 9	98	53	4. 15	. 88	7. 12
July	92. 8	69. 7	103	56	3. 93	1. 64	6. 53
August	92. 0	65. 6	103	55	3. 78	1. 49	6. 56
September	85. 6	60. 0	98	44	3. 10	. 64	6. 14
October	76. 7	49. 1	92	31	3. 11	. 68	4. 49
November	62. 6	39. 3	82	18	4. 26	1. 43	7. 11
December	52. 1	32. 4	75	10	3. 86	1. 70	6. 34
Year	72. 7	49. 8			49. 77		

The prevailing wind is out of the southwest at an average velocity of 8 to 10 miles per hour. While thunderstorms are common, particularly in summer, severe thunderstorms and tornadoes are far less common. Thunderstorms with damaging wind and hail occur 3 to 5 times in a 10-year period. Tornado frequency is only once, or possibly twice, in 10 years. This is far below the frequency in the tornado-alley areas to the west.

How This Survey Was Made

Soil scientists made this survey to learn what kinds of soil are in Jackson County, where they are located, and how they can be used. The soil scientists went into the county knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the size and speed of streams, the kinds of native plants or crops, the kinds of rock, and many facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. Each soil series is named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Amagon and Dundee, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Enders silt loam, 3 to 12 percent slopes, is one of several phases within the Enders series.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent because it is not practical to show on such a map all the small, scattered bits of soil of some kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series or of different phases within one series. Two such kinds of mapping units are shown on the soil map of Jackson County: soil complexes and undifferentiated groups.

A soil complex consists of areas of two or more soils so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and proportions are about

the same in all areas. Generally, the name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Linker-Hector complex, 12 to 40 percent slopes, is an example.

An undifferentiated group is made up of two or more soils that could be delineated individually but are shown as one unit because, for the purpose of the soil survey, there is little value in separating them. The pattern and proportion of soils are not uniform. An area shown on the map can be made up of only one of the dominant soils, or of two or more. Amagon and Forestdale silt loams is an undifferentiated soil group in this county.

While a soil survey is in progress, soil scientists take soil samples needed for laboratory measurements and for engineering tests. Laboratory data from the same kind of soil in other places are also assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

Soil scientists observe how soils behave when used as a growing medium for native and cultivated plants and as material for structures, foundations for structures, or covering for structures. They relate this behavior to properties of the soils. For example, they observe that filter fields for onsite disposal of sewage fail on a given kind of soil, and they relate this failure to the slow permeability of the soil or a high water table. They see that streets, road pavements, and foundations for houses are cracked on a given kind of soil, and they relate this failure to the high shrink-swell potential of the soil material. Thus, they use observation and knowledge of soil properties, together with available research data, to predict limitations or suitability of soils for present and potential uses.

After data have been collected and tested for the key, or benchmark, soils in a survey area, the soil scientists set up trial groups of soils. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. They then adjust the groups according to the results of their studies and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under current methods of use and management.

Some soils of Jackson County adjoin soils described in the published soil surveys for Cross County and Woodruff County, Ark. Differences in the names of a few adjoining mapping units result from changes in series concepts created by the adoption of the soil classification system currently used by the National Cooperative Soil Survey (*15*).[2]

General Soil Map

The general soil map at the back of this survey shows, in color, the soil associations in Jackson County. A soil association is a landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association can occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in a county, who want to compare different parts of a county, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide in managing a watershed, a wooded tract, or a wildlife area or in planning engineering works, recreational facilities, and community developments. It is not a suitable map for planning the management of a farm or field or for selecting the exact location of a road, building, or similar structure because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

The eight soil associations in Jackson County are described on the following pages. The terms for texture used in the title for several of the associations apply to the texture of the surface layer. For example, in the title of association 1, the word "loamy" refers to the texture of the surface layer.

The soil associations do not precisely join those of Woodruff County on the south and Cross County on the east. Some soils that are major in one county are minor or nonexistent in the other counties. Differences in the soil names are the result of changes in the soil classification system since publication.

1. Leadvale association

Moderately well drained, nearly level to moderately sloping loamy soils; mainly on hilltops in the uplands

This association is in the southwestern part of Jackson County, along and west of U.S. Highway 67. It is mainly on the tops of rolling hills and on old stream terraces along shallow, intermittent drainageways in valleys between the hills. Slopes range from about 1 to 12 percent.

The association occupies about 5 percent of the county. Leadvale soils make up about 75 percent of the association; and Linker, Enders, Mountainburg, and Sequatchie soils, about 25 percent.

Leadvale soils are moderately well drained. The surface layer is brown silt loam that is stony in some areas. The upper part of the subsoil is strong-brown and yellowish-brown, friable silt loam; the lower part is a firm, brittle fragipan that is mottled throughout. The fragipan is yellowish-brown silt loam in the upper part, strong-brown clay loam in the middle part, and brownish-yellow sandy clay loam in the lower part. It is underlain by sandstone bedrock at a depth of 3 to 6 feet or more.

Most of this association is used for forage crops. Broiler chickens are produced on some farms. Cultivated crops and truck crops, such as strawberries, are grown in some of the less sloping areas. Stony areas are used for native or improved pasture or woodland. Under good management that includes erosion control and a cropping system that includes close-growing cover crops, the soils throughout much of the association are fairly well suited to cultivated crops. Most farms range from 40 to 200 acres in size and are owner operated. Many farmers hold part-time jobs off the farm.

On most of this association, slope and the varying depth to bedrock, from 3 to 6 feet or more, are moderate or severe limitations for residential, building, or

[2] Italic numbers in parentheses refer to Literature Cited, p. 72.

highway uses. The slow percolation rate, the slope, and the varying depth to bedrock are generally severe limitations for septic tank absorption fields.

2. *Mountainburg-Enders-Linker association*

Well-drained, gently sloping to steep dominantly stony soils; mainly on benches and hillsides in the uplands

This association is adjacent to association 1 in the southwestern part of Jackson County and is generally west of U.S. Highway 67. The landscape is mainly one of hillsides and benches. Slopes range from about 3 to 40 percent. Shallow intermittent drainageways follow valleys between the hillsides.

The association occupies about 4 percent of the county. Mountainburg soils make up about 45 percent of the association; Enders soils, about 19 percent; Linker soils, about 17 percent; and Hector, Leadvale, and Sequatchie soils, about 19 percent.

Mountainburg soils are chiefly on benches. The surface layer is dark yellowish-brown stony fine sandy loam. The subsoil is yellowish-red gravelly loam, underlain by sandstone bedrock beginning at a depth of 12 to 20 inches.

Enders soils are on the middle and lower parts of hillsides. The surface layer is brown silt loam or stony silt loam. The upper part of the subsoil is yellowish-red loam; the lower part is red, mottled clay. The underlying material is gray and light-gray, mottled silty clay. Shale bedrock begins at a depth of 40 to about 60 inches.

Linker soils are intermingled with Mountainsburg soils in areas where the bedrock has weathered more deeply. The surface layer is dark grayish brown, and the subsurface layer is yellowish brown. Both are stony fine sandy loam or fine sandy loam. The upper part of the subsoil is strong-brown and yellowish-red loam; the lower part is yellowish-red flaggy fine sandy loam underlain by sandstone bedrock at a depth of 24 to 48 inches.

All the soils are well drained, but are generally too stony and steep for cultivation. Most of the acreage is woodland that has an understory of grasses and forbs that are grazed by beef cattle. Enders and Linker soils are fairly well suited to wood crops, and most acres have fair stands of oak and pine. Mountainburg soils generally have more open stands of poorer quality trees. Most farms range from 200 to 800 acres in size and are owner operated, but most of the farmsteads are in association 1. Many farmers hold part-time jobs off the farm.

On most of this association stoniness, slope, and shallowness over bedrock are severe limitations for residential, commercial, and highway construction, and for other nonfarm uses.

3. *Dundee-Forestdale-Amagon association*

Somewhat poorly drained and poorly drained, level and undulating loamy soils; on lower parts of old natural levees

Most of this association is in the western part of Jackson County, along the Black and White Rivers. It consists of level and undulating soils on the lower parts of old natural levees. In the undulating areas, ridges rise 2 to 5 feet above swales. Sluggish sloughs and creeks drain the area.

This association occupies about 12 percent of Jackson County. Dundee soils make up about 34 percent of the association; Forestdale soils, about 30 percent; Amagon soils, about 28 percent; and Sharkey, Dexter, and Jackport soils and water areas, about 8 percent.

Dundee soils are somewhat poorly drained and are generally at the higher elevations. The surface layer is very dark grayish-brown and dark grayish-brown silt loam. The upper part of the subsoil is grayish-brown, mottled silty clay loam; the lower part is light brownish-gray, mottled silt loam. The underlying material is gray, mottled silt loam.

Forestdale soils are poorly drained. They have a surface layer of dark grayish-brown and gray silt loam. The upper part of the subsoil is gray, mottled silty clay loam; the middle part is dark grayish-brown, mottled silty clay; and the lower part is olive-gray, mottled silty clay.

Amagon soils also are poorly drained. They have a dark grayish-brown silt loam surface layer. The upper part of the subsoil is gray, mottled silt loam; the lower part is alternating layers of gray to dark grayish-brown, mottled silty clay loam and silt loam. The underlying material is dark yellowish-brown, mottled silt loam.

Soils of this association are productive, and most of the acreage is cultivated. The main crop is soybeans. Rice, cotton, grain sorghum, and winter small grain are also important. Most farms range from 80 to 1,500 acres in size and are owner operated. Efficient farm management requires surface drainage.

Few farmsteads and dwellings are on this association. Wetness and generally low bearing strength make the soils poorly suited to nonfarm uses. The seasonal high water table and slow percolation rate are severe limitations for septic tank absorption fields.

4. *Egam-Sharkey-Staser association*

Well-drained to poorly drained, level loamy soils; on flood plains

This association is in the southwestern part of Jackson County, adjacent to the White River. It consists of young natural levees and back swamps that are subject to flooding where not protected by levees. It is drained by sluggish creeks and sloughs. Several lakes are within this association.

This association occupies about 6 percent of the county. Egam soils make up about 43 percent of the association; Sharkey soils, 16 percent; Staser soils, 14 percent; and Amagon, Dundee, and Dexter soils and water areas, about 27 percent.

Egam soils are level and moderately well drained and are on young natural levees. The surface layer is dark-brown silt loam. The upper part of the subsoil is very dark grayish-brown silty clay loam, the middle part is dark-brown silty clay loam, and the lower part is brown silt loam.

Sharkey soils are poorly drained and are in back swamps. The surface layer is dark grayish-brown silty clay loam. The subsoil is gray, mottled clay, and the underlying material is gray, mottled silty clay.

Staser soils are level and well drained and are on young natural levees. The surface layer is dark-brown silt loam. The upper part of the underlying material is dark-brown silt loam and loam, thinly stratified with fine sandy loam; the lower part is yellowish-brown fine sand.

Soils of this association are suitable for cultivation. The main crops are soybeans, rice, and cotton. Grain sorghum and forage crops are also grown. Most farms range from 80 to 1,000 acres in size, and most are owner operated. These soils are subject to occasional flooding, and Sharkey soils require surface drainage.

Few farmsteads and dwellings are on this association. The hazard of flooding makes the soils poorly suited to nonfarm uses.

5. Bosket-Dundee-Beulah association

Somewhat excessively drained to somewhat poorly drained, level and undulating loamy soils; on higher parts of old natural levees

Most of this association is a nearly continuous band from north to south across Jackson County, generally parallel with the east banks of the Black and White Rivers. Scattered small, irregular, insular areas occur throughout the eastern part of the county. The landscape is one of intermingled level areas and undulating ridges and swales (fig. 2). Sluggish intermittent drainageways flow through low parts of the association.

This association occupies about 22 percent of the county. Bosket soils make up about 40 percent of the association; Dundee soils, 38 percent; Beulah soils, 13 percent; and Patterson and Dexter soils and water areas, about 9 percent.

Bosket soils are level and undulating and well drained. They are on broad ridgetops and in adjacent high areas. The surface layer is dark-brown fine sandy loam, and the subsurface layer is dark yellowish-brown fine sandy loam. The subsoil is dark-brown sandy clay loam. The underlying material is dark-brown fine sandy loam and loamy fine sand.

Dundee soils are somewhat poorly drained. They occupy lower areas of the association. The surface layer is very dark grayish-brown and dark grayish-brown silt loam. The upper part of the subsoil is grayish-brown, mottled silty clay loam; the lower part is light brownish-gray, mottled silty clay loam. The underlying material is gray, mottled silt loam.

Beulah soils are undulating and somewhat excessively drained. They are on broad ridgetops and in adjacent high areas. The surface layer is brown fine sandy loam. The subsoil is dark-brown and brown fine sandy loam, and the underlying material is strong-brown loamy fine sand.

Soils of this association are generally well suited to cultivation, and a wide variety of crops can be grown. The main crops are soybeans, cotton, and winter small grain. Grain sorghum and watermelons are also grown, and other truck crops are suited. Farms range up to 2,000 acres in size, and about half are owner operated. Dundee soils commonly require surface drainage for efficient farm management. The undulating Bosket and Beulah soils are erodible in the more sloping areas.

Many farmsteads and dwellings are on this association. Except in the lower areas where the seasonal water table is high, limitations for nonfarm uses are only slight to moderate.

6. Amagon-Dexter association

Poorly drained and well-drained, level and undulating loamy soils; on higher parts of old natural levees

This association occurs as scattered, relatively small, insular areas throughout the eastern two-thirds of Jackson County. These areas, at the higher local elevations, are remnants of older natural levees. The landscape is one of undulating ridges and swales and intermingled level areas. The lower, level areas are drained by sluggish intermittent drainageways.

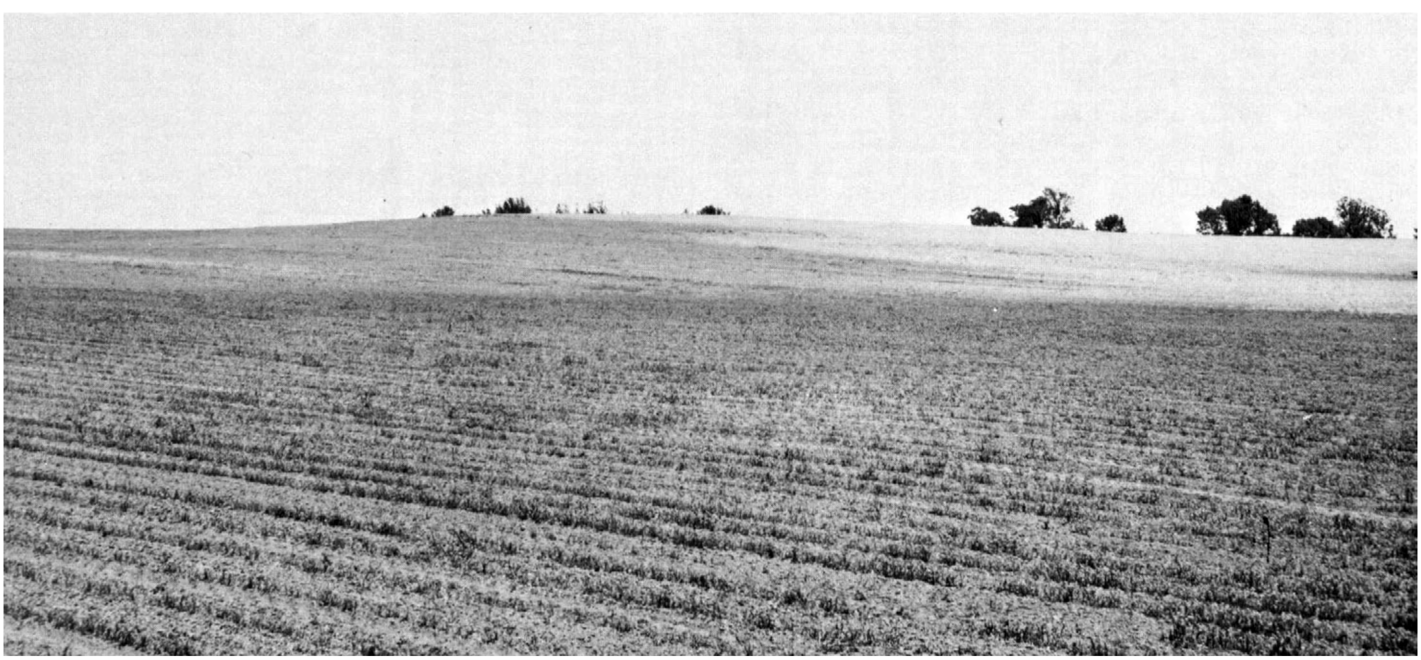

Figure 2.—**Typical landscape in association 5.**

The association occupies about 5 percent of the county. Amagon soils make up about 42 percent of the association; Dexter soils, 34 percent; and Bosket, Dundee, Forestdale, and Patterson soils and water areas, about 24 percent.

Amagon soils are level and poorly drained and occupy the lower parts of the association. The surface layer is dark grayish-brown silt loam. The upper part of the subsoil is gray, mottled silt loam; the lower part is alternating layers of gray to dark grayish-brown, mottled silty clay loam and silt loam. The underlying material is dark yellowish-brown, mottled silt loam.

Dexter soils are undulating and well drained. They are on the broader ridgetops and in adjacent higher areas. The surface layer is brown silt loam. The upper part of the subsoil is dark-brown silty clay loam; the lower part is dark-brown, mottled loam. The underlying material is dark-brown loamy fine sand.

Soils of this association are suitable for cultivation. The main crops are soybeans and cotton. Winter small grain, rice, and grain sorghum are also important. Most farms range from 80 to 640 acres in size, and about 60 percent are owner operated. Amagon soils require surface drainage for efficient farm management. Dexter soils are erodible in the more sloping areas.

The scattered farmsteads and dwellings on this association are mainly at the higher local elevations, where the soils have only slight to moderate limitations for nonfarm uses. In the lower areas, wetness and the seasonal high water table are generally severe limitations for nonfarm uses.

7. *Foley-Calhoun association*

Poorly drained, level loamy soils that have a high concentration of sodium in the subsoil; on broad flats

This association is mainly in the eastern half of Jackson County, on broad flats of thick sediment that is high in silt. It makes up about 25 percent of the county. It is about 46 percent Foley soils, 23 percent Calhoun soils, and 31 percent McCrory, Amagon, Dexter, Grubbs, Lafe, and Dundee soils. All are poorly drained.

Foley soils have a brown silt loam surface layer. The subsurface layer is grayish-brown, mottled silt loam. The upper part of the subsoil is grayish-brown, mottled silty clay loam; the lower part is grayish-brown and dark grayish-brown, mottled silt loam. The underlying material is yellowish-brown, mottled fine sandy loam.

Calhoun soils have a dark grayish-brown silt loam surface layer. The subsurface layer is gray, mottled silt loam. The subsoil is grayish-brown, mottled silt loam. These soils have a high concentration of sodium at variable depths in the subsoil.

Soils of this association are suitable for farming, and most of the acreage is cultivated. The main crop is soybeans. Rice, winter small grain, grain sorghum, and cotton are also important. Most farms range from 120 to 640 acres in size and are owner operated. Efficient farm management requires surface drainage.

Some farmsteads and dwellings are on this association. Low bearing strength, wetness, a seasonal high water table, and a slow percolation rate make the soils poorly suited to dwellings and other nonfarm uses.

8. *Crowley-Jackport association*

Poorly drained and somewhat poorly drained, level soils that have a clayey subsoil; on broad flats in high, abandoned, old back swamps

This association is mainly in the eastern part of Jackson County. Two small areas are in the southwestern part, just west of the White River. The association consists of broad flats in high, abandoned, old clayey back swamps that have a thin, discontinuous mantle of silty sediment. There are few significant natural drainageways. Surface water stands for long periods or is carried away by the manmade drains.

The association occupies about 21 percent of the county. Crowley soils make up about 52 percent of the association; Jackport soils, 40 percent; and Hillemann, Grubbs, Amagon, and Dundee soils and water areas, about 8 percent.

Crowley soils are poorly drained and are generally at the slightly higher elevations. The surface layer is dark-gray silt loam, and the subsurface layer is gray, mottled, silt loam. The upper part of the subsoil is gray and olive-gray, mottled silty clay; the lower part is olive-gray, mottled silty clay loam and silt loam. The underlying material is grayish-brown, mottled silt loam.

Jackport soils are somewhat poorly drained. The surface layer is dark grayish-brown silty clay loam. The upper part of the subsoil is dark grayish-brown, mottled silty clay; the middle part is grayish-brown and olive-gray, mottled clay; and the lower part is olive-gray, mottled silty clay. The underlying material is light brownish-gray, mottled silty clay loam.

Soils of this association are suitable for farming, and most of the acreage is cultivated. The main crops are soybeans and rice. Grain sorghum, winter small grain, and cotton are also important. Farms range in size from about 80 to 1,280 acres, and most are owner operated. Efficient farm management requires surface drainage.

Few dwellings are on this association. Wetness, the seasonal high water table, the low bearing strength, and the slow percolation rate make these soils poorly suited to dwellings, buildings, or highways.

Descriptions of the Soils

This section describes the soil series and mapping units in Jackson County. Each soil series is described in detail, and then, briefly, each mapping unit in that series. Unless it is specifically mentioned otherwise, it is to be assumed that what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the mapping unit and the description of the soil series to which it belongs.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface downward to rock or other underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second is much more detailed and is for those who need to make thorough and precise studies of soils. The profile described in the series is representa-

tive for mapping units in that series. If the profile of a given mapping unit is different from the one described for the series, these differences are stated in describing the mapping unit, or they are differences that are apparent in the name of the mapping unit. Color terms are for moist soil unless otherwise stated.

Following the name of each mapping unit is a symbol in parentheses. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of each description of a mapping unit are the capability unit and woodland group in which the mapping unit has been placed. The capability unit and woodland group for each soil in the county are shown in the "Guide to Mapping Units" at the back of this survey.

The acreage and proportionate extent of each mapping unit are shown in table 2. Many of the terms used in describing soils can be found in the Glossary, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*12*).

Amagon Series

The Amagon series consists of poorly drained, level soils on the low parts of natural levees. These soils formed in beds of loamy sediment.

In a representative profile the surface layer is dark grayish-brown silt loam about 6 inches thick. The subsoil extends to a depth of 60 inches. The upper part is 7 inches of gray, mottled silt loam. The middle part is 8 inches of gray, mottled silty clay loam, 7 inches of grayish-brown, mottled silty clay loam, and 13 inches of dark grayish-brown, mottled silt loam. The lower part is 19 inches of grayish-brown, mottled silty clay loam. The underlying material is dark yellowish-brown, mottled silt loam.

Amagon soils are moderate in natural fertility and respond well to fertilization. They are easy to till. If drained and well managed, they are suited to most local crops. Permeability is slow, and available water capacity is high. The surface layer puddles and crusts over after a rain. Most of the acreage is cultivated.

Representative profile of Amagon silt loam, in a moist cultivated area of Amagon and Forestdale silt loams, SE¼SW¼SW¼ sec. 14, T. 14 N., R. 2 W.

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) silt loam; weak, fine, granular structure; friable; few fine roots; few dark concretions; medium acid; clear, smooth boundary.

B1g—6 to 13 inches, gray (10YR 6/1) silt loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; moderate, medium, subangular blocky structure; friable; few fine roots; common, fine and medium, dark concretions; strongly acid; clear, smooth boundary.

B21tg—13 to 21 inches, gray (10YR 6/1) silty clay loam; common, fine, distinct, dark yellowish-brown mottles; moderate, medium, subangular blocky structure; firm; continuous clay films on ped faces; few gray silt coatings; common, fine, dark concretions; strongly acid; clear, smooth boundary.

B22t—21 to 28 inches, grayish-brown (10YR 5/2) silty clay loam; common, medium, distinct, yellowish-brown (10YR 5/4) and dark yellowish-brown (10YR 4/4) mottles; moderate, medium, subangular blocky structure; firm; continuous clay films and few gray silt coatings on ped faces; common, fine and medium, dark concretions; strongly acid; clear, smooth boundary.

B23t—28 to 41 inches, dark grayish-brown (10YR 4/2) silt loam; common, fine, distinct, strong-brown and yellowish-brown mottles; weak, medium, subangular blocky structure; firm; few patchy clay films on ped faces; common, fine and medium, dark concretions; strongly acid; clear, smooth boundary.

B24t—41 to 60 inches, grayish-brown (10YR 5/2) silty clay loam; many, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; moderate, medium, subangular blocky structure; firm; few patchy clay films on ped faces; few, black, weblike ped coatings; common, fine, dark concretions; strongly acid; clear, smooth boundary.

C—60 to 72 inches, dark yellowish-brown (10YR 4/4) silt loam; many, coarse, distinct, light brownish-gray (10YR 6/2) mottles; massive; friable; few, fine, dark concretions; medium acid.

The Ap horizon is dark grayish brown to brown. The B1g horizon is gray or light brownish gray. The B2 horizon is silt loam or silty clay loam. The B22t horizon is grayish brown or gray, the B23t horizon is dark grayish brown or gray, and the B24t horizon is grayish brown or gray. The C horizon is dark yellowish-brown to gray loam to silty clay loam. Reaction ranges from medium acid to very strongly acid throughout the profile.

These soils have slightly less very fine sand in the B2t horizon than is defined as the range for the series, but this difference does not alter their usefulness and behavior.

Amagon soils are associated with Calhoun, Crowley, Dexter, Dundee, Foley, and Forestdale soils. They do not have the tongues of the A2 horizon in the B horizon and the high content of sodium in the B horizon that are typical of Calhoun and Foley soils. They have a less clayey B horizon than Crowley and Forestdale soils. They are more poorly drained and are grayer than Dexter and Dundee soils.

TABLE 2.—*Approximate acreage and proportionate extent of the soils*

Soil	Acres	Percent
Amagon and Forestdale silt loams	34, 290	8. 5
Beulah fine sandy loam, undulating	11, 998	3. 0
Bosket fine sandy loam, 0 to 1 percent slopes	10, 208	2. 5
Bosket fine sandy loam, undulating	29, 001	7. 2
Crowley silt loam	42, 074	10. 5
Crowley and Hillemann silt loams	4, 439	1. 1
Dexter silt loam, 0 to 1 percent slopes	3, 270	. 8
Dexter silt loam, undulating	7, 012	1. 7
Dundee silt loam, 0 to 1 percent slopes	27, 802	6. 9
Dundee silt loam, undulating	29, 845	7. 4
Egam silt loam	10, 661	2. 7
Enders silt loam, 3 to 12 percent slopes	1, 278	. 3
Enders stony silt loam, 12 to 25 percent slopes	3, 215	. 8
Foley-Calhoun complex	54, 456	13. 5
Foley-Calhoun-McCrory complex	27, 608	6. 9
Forestdale silty clay loam	11, 945	3. 0
Grubbs silt loam	3, 879	1. 0
Jackport silty clay loam	34, 650	8. 6
Lafe silt loam	1, 158	. 3
Leadvale silt loam, 1 to 3 percent slopes	969	. 2
Leadvale silt loam, 3 to 8 percent slopes	11, 740	2. 9
Leadvale stony silt loam, 3 to 12 percent slopes	5, 933	1. 5
Linker fine sandy loam, 3 to 8 percent slopes	1, 519	. 4
Linker-Hector complex, 12 to 40 percent slopes	5, 166	1. 3
Mountainburg stony fine sandy loam, 3 to 12 percent slopes	6, 990	1. 7
Patterson fine sandy loam	7, 884	2. 0
Sequatchie loam	1, 226	. 3
Sharkey silty clay loam	5, 091	1. 3
Staser silt loam	3, 406	. 8
Water	3, 591	. 9
Total	402, 304	100. 00

Amagon and Forestdale silt loams (Af).—These soils have the profiles described as representative of their respective series. They are level and are on the low parts of natural levees. Slopes are less than 1 percent. Areas range from 10 to 500 acres in size.

Amagon soils commonly make up 45 to 85 percent of an area. Forestdale soils make up as much as 35 percent of some areas, but are lacking in others. Included with these soils in mapping are spots of Crowley, Calhoun, Dundee, and Foley soils.

Amagon and Forestdale soils are suited to farming, but excess water is a severe limitation. Fieldwork is delayed several days after a rain unless surface drains are installed. Under good management that includes adequate drainage, clean-tilled crops that leave large amounts of residue can be safely grown year after year.

The main crop is soybeans. Other suitable crops are grain sorghum, cotton, and rice. Winter small grain can be grown where surface drainage is adequate. Suitable pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-1; woodland group 1w6.

Beulah Series

The Beulah series consists of somewhat excessively drained, undulating soils on high, natural levees along creeks and abandoned river channels. These soils formed in stratified loamy and sandy sediments.

In a representative profile the surface layer is brown fine sandy loam about 10 inches thick. The subsoil is dark-brown and brown fine sandy loam. It extends to a depth of about 42 inches. The underlying material is strong-brown loamy fine sand.

Beulah soils are moderate in natural fertility and respond well to fertilization. They warm up early and can be planted early in spring. They are easy to till and can be cultivated throughout a wide range of moisture content. They are suited to most local crops. In places a plowpan below plow depth restricts root penetration and water movement. Permeability is moderately rapid, and available water capacity is low. Most of the acreage is cultivated.

Representative profile of Beulah fine sandy loam, undulating, in a moist cultivated area, SW¼NE¼SW¼ sec. 25, T. 11 N., R. 3 W.

Ap—0 to 10 inches, brown (10YR 4/3) fine sandy loam; weak, medium, granular structure; very friable; common fine roots; medium acid; abrupt, smooth boundary.

B21—10 to 14 inches, dark-brown (7.5YR 4/4) fine sandy loam; weak, medium, subangular blocky structure; very friable; common fine roots; medium acid; gradual, wavy boundary.

B22—14 to 42 inches, brown (7.5YR 5/4) fine sandy loam; weak, medium, subangular blocky structure; very friable; few fine roots in upper part; few pores; medium acid; gradual, wavy boundary.

C—42 to 72 inches, strong-brown (7.5YR 5/6) loamy fine sand; single grained; loose; strongly acid.

The Ap horizon is brown or dark brown. The B horizon is brown, strong brown, or dark brown. The C horizon is strong-brown or brown loamy fine sand or fine sandy loam. Reaction is medium acid or strongly acid throughout the profile.

Beulah soils are associated with Bosket, Dexter, Dundee, and Patterson soils. They are browner throughout than Dundee and Patterson soils. They are less clayey in the B horizon than Bosket and Dexter soils and are more sandy in the B horizon than any associated soil except Patterson soils.

Beulah fine sandy loam, undulating (BeU).—This soil is on the higher parts of natural levees. It is in areas of alternating long, narrow swales and wide ridges. The ridges rise 2 to 10 feet above the swales. Areas are generally 20 to 30 acres in size. Slopes range from 0 to 8 percent.

Included with this soil in mapping are a few narrow escarpments and spots of Bosket, Dexter, Dundee, and Patterson soils.

This Beulah soil is suited to farming, but erosion is a moderate hazard on the steeper slopes. Soil blowing is a moderate hazard in spring if the soil is bare of vegetation. Available water capacity is low, and droughtiness is a moderate limitation. Under good management, clean-tilled crops that leave large amounts of residue can be grown year after year.

The main crops are cotton and soybeans. Other suitable crops are grain sorghum, peanuts, corn (fig. 3), winter small grain, and truck crops, such as okra, green beans, potatoes, sweet corn, tomatoes, and melons. Suitable pasture plants are bermudagrass and bahiagrass. Capability unit IIs-1; woodland group 2o4.

Bosket Series

The Bosket series consists of well-drained, level and undulating soils on natural levees along creeks and abandoned river channels. These soils formed in stratified beds of predominantly loamy sediment.

In a representative profile the surface layer is dark-brown fine sandy loam about 8 inches thick. The subsurface layer, about 9 inches thick, is dark yellowish-brown fine sandy loam. The subsoil is dark-brown sandy clay loam. It extends to a depth of about 38 inches. The underlying material is dark-brown fine sandy loam and loamy fine sand.

Bosket soils are moderate in natural fertility and respond well to fertilization. They are easy to till and can be cultivated throughout a wide range of moisture content. They are suited to most local crops. In places a plowpan below plow depth restricts root penetration and water movement. Permeability and available water capacity are moderate. Most of the acreage is cultivated.

Representative profile of Bosket fine sandy loam, 0 to 1 percent slopes, in a moist cultivated field, NE¼NW¼ NE¼ sec. 22, T. 13 N., R. 3 W.

Ap—0 to 8 inches, dark-brown (10YR 3/3) fine sandy loam; weak, medium, granular structure; very friable; many fine roots; strongly acid; abrupt, smooth boundary.

A3—8 to 17 inches, dark yellowish-brown (10YR 3/4) fine sandy loam; weak, fine and medium, subangular blocky structure; very friable; common roots; strongly acid; clear, smooth boundary.

B21t—17 to 22 inches, dark-brown (7.5YR 4/4) sandy clay loam; weak, medium, subangular blocky structure; friable; thin patchy clay films on ped faces; common fine roots; common, fine, dark concretions; very strongly acid; clear, smooth boundary.

B22t—22 to 38 inches, dark-brown (7.5YR 4/4) sandy clay loam; moderate, medium, subangular blocky structure; firm; thin continuous clay films on ped faces and in root channels; few roots; common, fine, dark concretions; very strongly acid; clear, smooth boundary.

C1—38 to 50 inches, dark-brown (7.5YR 4/4) fine sandy loam; massive; very friable; common, fine, dark concretions; very strongly acid; clear, smooth boundary.

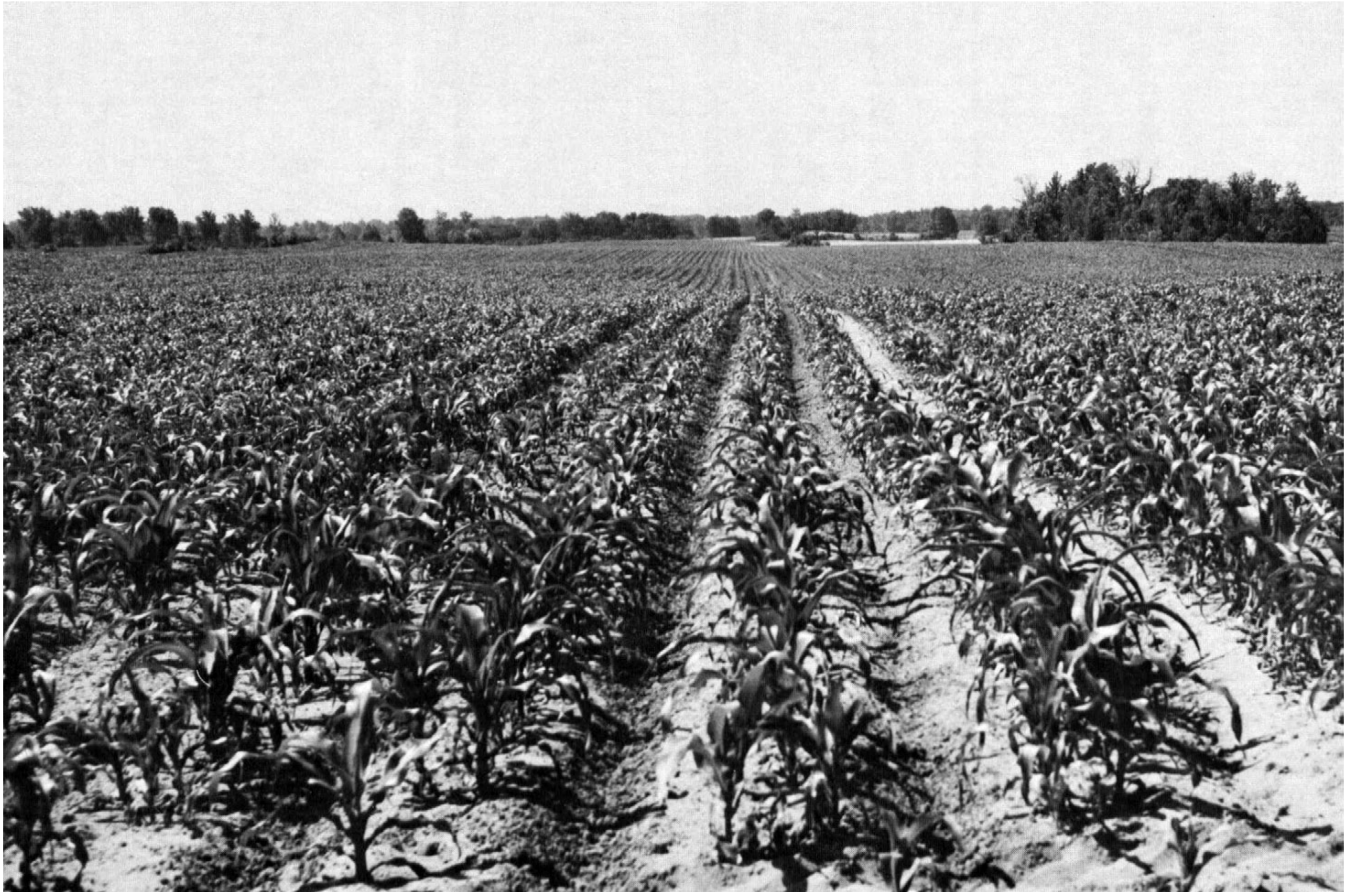

Figure 3.—**Corn on Beulah fine sandy loam, undulating.**

C2—50 to 72 inches, dark-brown (7.5YR 4/2) loamy fine sand; massive; very friable; very strongly acid.

The Ap horizon is dark brown or very dark grayish brown. In some places no A3 horizon has formed. The B2t horizon is dark-brown, brown, or dark yellowish-brown sandy clay loam or loam. The C horizon is dark-brown to yellowish-brown fine sandy loam, loamy fine sand, or fine sand. The A horizon is medium acid or strongly acid, and the B and C horizons are strongly acid or very strongly acid.

Bosket soils are associated with Beulah, Dexter, Dundee, and Patterson soils. They are browner throughout than Dundee and Patterson soils. They are more clayey in the B horizon than Beulah and Patterson soils, and are more sandy in the A and B horizons than Dexter and Dundee soils.

Bosket fine sandy loam, 0 to 1 percent slopes (BoA).—This soil has the profile described as representative of the series. It is on the higher parts of natural levees near creeks and abandoned river channels. Areas are generally 10 to 100 acres in size.

Included with this soil in mapping are a few small areas of undulating soil and spots of Beulah, Dexter, and Dundee soils.

This Bosket soil is well suited to farming. It warms up early in spring and can be planted early. Under good management, clean-tilled crops that leave large amounts of residue can be grown year after year.

The main crops are cotton and soybeans. Other suitable crops are grain sorghum, winter small grain, corn, peanuts, and truck crops, such as green beans, okra, sweet corn, strawberries, potatoes, tomatoes, and melons. Suitable pasture plants are bermudagrass, bahiagrass, tall fescue, and white clover. Capability unit I–1; woodland group 2o4.

Bosket fine sandy loam, undulating (BoU).—This soil is on the tops and sides of natural levees. It is in areas of alternating long, narrow swales and low ridges that rise 2 to 5 feet above swales. Slopes are 0 to 3 percent. Areas range from 10 to 150 acres in size.

Included with this soil in mapping are a few narrow escarpments, and spots of Beulah, Dexter, Dundee, and Patterson soils.

This Bosket soil is well suited to farming, but water erosion is a moderate hazard on the steeper slopes. Soil blowing is a moderate hazard in spring if the soil is bare. This soil warms up early in spring and can be planted early. Under good management, clean-tilled crops that leave large amounts of residue can be grown year after year.

The main crops are cotton and soybeans. Other suitable crops are grain sorghum, winter small grain, corn,

peanuts, and truck crops, such as okra, green beans, potatoes, sweet corn, tomatoes, strawberries, and melons. Suitable pasture plants are bermudagrass, bahiagrass, tall fescue, and white clover. Capability unit IIe-1; woodland group 2o4.

Calhoun Series

The Calhoun series consists of poorly drained, level soils on broad flats. These soils formed in thick beds of loess or old alluvium high in silt content.

In a representative profile the surface layer is dark grayish-brown silt loam 9 inches thick. The subsurface layer is gray, mottled silt loam about 9 inches thick. The subsoil extends to a depth of more than 6 feet. The upper 8 inches is grayish-brown, mottled silt loam; tongues of gray silt loam extend down from the subsurface layer. The lower part of the subsoil is grayish-brown, mottled silt loam.

Calhoun soils are moderate in natural fertility, but have a high concentration of sodium and magnesium below a depth of about 3 feet. They respond well to fertilization and are easy to till. The surface puddles and crusts over after a rain. If drained and well managed, these soils are suited to most local crops. Permeability is slow, and available water capacity is high. Most of the area is cultivated.

The Calhoun soils in Jackson County are mapped only with Foley soils.

Representative profile of Calhoun silt loam, in a moist cultivated area of Foley-Calhoun complex, NW¼SW¼ SE¼ sec. 34, T. 9 N., R. 1 W.

Ap—0 to 9 inches, dark grayish-brown (10YR 4/2) silt loam; weak, medium, subangular blocky structure; very friable; many fine roots; common dark concretions; medium acid; clear, smooth boundary.

A21g—9 to 14 inches, gray (10YR 6/1) silt loam; common, medium, distinct, brown (10YR 4/3) mottles; weak, medium, subangular blocky structure; friable; few fine roots; few pores; few dark concretions; strongly acid; clear, wavy boundary.

A22g—14 to 18 inches, gray (10YR 6/1) silt loam; common, medium, distinct, yellowish-brown (10YR 5/6) mottles; moderate, medium, subangular blocky structure; friable; few fine roots; common pores; few dark concretions; strongly acid; clear, irregular boundary.

B21tg—18 to 26 inches, grayish-brown (10YR 5/2) silt loam; common, medium, distinct, yellowish-brown (10YR 5/4) mottles; moderate, medium, subangular blocky structure; firm; patchy clay films and gray silt coatings on most ped faces; tongues of gray (10YR 6/1) silt loam 1 to 3 inches in diameter extend through the horizon at 12- to 18-inch intervals; few roots; few pores; few dark concretions; strongly acid; clear, wavy boundary.

B22tg—26 to 35 inches, grayish-brown (2.5Y 5/2) silt loam; few, medium, distinct, brown (10YR 4/3) mottles; moderate, coarse, prismatic structure parting to moderate, medium, angular blocky structure; firm; continuous clay film, on ped faces; light brownish-gray (10YR 6/2) silt coatings on faces of some peds; few pores; few dark concretions; few root channels; strongly acid; gradual, wavy boundary.

B23tg—35 to 46 inches, grayish-brown (2.5Y 5/2) silt loam; common, fine and medium, prominent, dark-brown (7.5YR 4/4) mottles; moderate, medium, prismatic structure parting to moderate, medium, subangular blocky structure; friable; many patchy clay films on ped faces; few root channels; common pores; common dark concretions; few black stains on faces of peds in the lower part; strongly acid; gradual, wavy boundary.

B24tg—46 to 60 inches, grayish-brown (2.5Y 5/2) silt loam; many, fine and medium, prominent, dark-brown (7.5YR 4/4) mottles and distinct yellowish-brown (10YR 5/6) mottles; moderate, medium, prismatic structure parting to moderate, medium, subangular blocky structure; friable; many patchy clay films on ped faces; many black stains on prism faces; common root channels coated with black; few pores; few dark concretions; neutral; clear, smooth boundary.

B25tg—60 to 72 inches, grayish-brown (2.5Y 5/2) silt loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; moderate, coarse, prismatic structure parting to strong, medium, angular blocky structure; friable; many patchy clay films on ped faces; few black stains on prism faces; few root channels; few dark concretions; neutral.

The Ap horizon is dark grayish brown to brown. The A2g horizon is gray or light brownish gray. The Btg horizon is grayish-brown or gray silt loam or silty clay loam. The A horizon is medium acid or strongly acid. The B21tg and B22tg horizons are strongly acid or very strongly acid. The B23tg horizon is strongly acid to neutral, and the B24tg and B25tg horizons are slightly acid to mildly alkaline.

Calhoun soils are associated with Amagon, Foley, Hillemann, Lafe, and McCrory soils. They differ from Amagon soils in having tongues that extend from the A2g into the B2tg horizon. They have a high content of sodium and magnesium in the lower part of the B2t horizon, whereas the Foley, Hillemann, and McCrory soils have a high content of these elements in the middle part, and Lafe soils have a high content throughout the B2t horizon. Calhoun soils are more poorly drained than Hillemann soils, and they lack the red mottles in the B2t horizon that are typical of Hillemann soils.

Crowley Series

The Crowley series consists of poorly drained, level soils on broad flats. These soils formed in a thin layer of loamy sediments of eolian or alluvial origin and in underlying clayey and loamy sediments.

In a representative profile the surface layer is dark-gray silt loam about 7 inches thick. The subsurface layer, about 5 inches thick, is gray, mottled silt loam. The subsoil extends to a depth of about 56 inches. The upper 18 inches is gray and dark-red, mottled silty clay; the next 9 inches is olive-gray, mottled silty clay; the next 7 inches is olive-gray, mottled silty clay loam; the lower 10 inches is olive-gray, mottled silt loam. The underlying material is grayish-brown, mottled silt loam.

Crowley soils are moderate in natural fertility and and respond well to fertilization. They are easy to till, but the surface crusts over after a rain. If drained and well managed, these soils are suited to most local crops. Permeability is very slow, and available water capacity is high. Most of the acreage is cultivated.

Representative profile of Crowley silt loam, in a moist cultivated area of Crowley and Hillemann silt loams, SE¼SE¼NE¼ sec. 13, T. 10 N., R. 1 W.

Ap—0 to 7 inches, dark-gray (10YR 4/1) silt loam; weak, medium, subangular blocky structure; friable; many fine roots; common dark concretions; medium acid; clear, smooth boundary.

A2g—7 to 12 inches, gray (10YR 6/1) silt loam; common, medium, distinct, dark-brown (7.5YR 4/4) and dark yellowish-brown (10YR 4/4) mottles; weak, medium, subangular blocky structure; friable; few fine roots; few pores; few dark concretions; strongly acid; abrupt, smooth boundary.

B21tg—12 to 30 inches, equally mottled gray (10YR 5/1) and dark-red (2.5YR 3/6) silty clay; moderate, medium,

subangular blocky structure; firm; many patchy clay films on ped faces; few roots; few dark concretions; very strongly acid; gradual, wavy boundary.

B22tg—30 to 39 inches, olive-gray (5Y 5/2) silty clay; few, medium, prominent, yellowish-brown (10YR 5/6) mottles; weak, medium, subangular blocky structure; firm; common patchy clay films and few black stains on ped faces; few root cortices and channels; few pores; few dark concretions; very strongly acid; clear, smooth boundary.

B23tg—39 to 46 inches, olive-gray (5Y 5/2) silty clay loam; few, medium, prominent, yellowish-brown (10YR 5/8) mottles; moderate, medium, subangular blocky structure; friable; common patchy clay films on ped faces; common pores; few dark concretions; medium acid; clear, smooth boundary.

B3g—46 to 56 inches, olive-gray (5Y 5/2) silt loam; few, medium, prominent, yellowish-brown (10YR 5/8) mottles; weak, medium, subangular blocky structure; friable; few pores; few dark concretions; moderately alkaline; clear, smooth boundary.

C—56 to 72 inches, grayish-brown (2.5Y 5/2) silt loam; common, coarse, distinct, yellowish-brown (10YR 5/4) mottles; weak, medium, subangular blocky structure; friable; few pores; moderately alkaline.

The Ap horizon ranges from dark gray to grayish brown. The A2g horizon is gray, light brownish gray, or grayish brown. The depth to the B2tg horizon is 8 to 20 inches. The B2tg horizon is gray, grayish brown, or olive gray. The B21tg and B22tg horizons are silty clay or clay. The B23tg horizon is silty clay or silty clay loam. The B3g horizon is olive-gray or grayish-brown silt loam or silty clay loam. The A horizon is medium acid to very strongly acid. The B21tg and B22tg horizons are strongly acid or very strongly acid. The B23tg horizon is medium acid to neutral, and the lower horizons are slightly acid to moderately alkaline.

Crowley soils are associated with Forestdale, Grubbs, Hillemann, and Jackport soils. They are grayer in the A horizon and the upper part of the B horizon than Grubbs soils. They do not have the tonguing of the A2 horizon into the B horizon that is typical of Hillemann soils, and have more clay in the B horizon than those soils. They are not so acid in the lower part of the B horizon as Forestdale soils. Crowley soils have an abrupt textural change between the A and B horizons, a characteristic lacking in the associated soils.

Crowley silt loam (Co).—This soil is at the higher elevations on broad flats. Areas are generally 10 to 500 acres in size. Slope is less than 1 percent. The profile of this soil is similar to the one described as representative of the series, but the subsoil is grayish brown and is commonly free of red mottles.

Included with this soil in mapping are a few narrow escarpments and spots of Forestdale, Grubbs, Hillemann, and Jackport soils.

This Crowley soil is suited to farming, but excess water is a severe limitation. Fieldwork is delayed several days after a rain unless surface drains are installed. Under good management that includes adequate drainage, clean-tilled crops that leave large amounts of residue can be grown year after year.

If grading and smoothing are needed, depth to the clayey subsoil should be determined before cuts are made. The clayey subsoil is plastic and sticky and is difficult to cultivate when exposed at the surface.

The main crops are soybeans and rice. Other suitable crops are corn, cotton, and grain sorghum. Winter small grain can be grown where surface drainage is adequate. Suitable pasture plants are bermudagrass, tall fescue, bahiagrass, annual lespedeza, and white clover. Capability unit IIIw–2; woodland group 3w9.

Crowley and Hillemann silt loams (Cr).—These soils have the profiles described as representative of their respective series. They are at the higher elevations on broad flats. Areas range from 10 to 500 acres in size. Slopes are less than 1 percent. About 50 to 70 percent of an area is Crowley soil, and 20 to 40 percent is Hillemann soil.

Included with these soils in mapping are a few rises where slopes are 1 to 3 percent, a few narrow escarpments, and spots of Calhoun, Grubbs, and Foley soils.

Crowley and Hillemann soils are suited to farming, but excess water is a moderate to severe limitation. Fieldwork is delayed several days after a rain unless surface drains are installed. Under good management that includes adequate drainage, clean-tilled crops that leave large amounts of residue can be grown year after year.

If the soils are to be graded and smoothed, depth to the subsoil should be determined before cuts are made. In some places the subsoil is plastic, sticky clay that is difficult to cultivate when exposed at the surface by grading. In other places the subsoil has a high content of sodium and magnesium, and if it is brought near the surface by grading, productivity is impaired.

The main crop is soybeans. Other suitable crops are grain sorghum, rice, corn, and cotton. Winter small grain can be grown where surface drainage is adequate. Suitable pasture plants are bermudagrass, bahiagrass, tall fescue, white clover, and annual lespedeza. Capability unit IIIw–2; woodland group 3w9.

Dexter Series

The Dexter series consists of well-drained, level and undulating soils on natural levees along creeks and abandoned river channels. These soils formed in stratified beds of predominately loamy sediments.

In a representative profile the surface layer is brown silt loam about 7 inches thick. The subsoil extends to a depth of about 63 inches. The upper 41 inches is dark-brown silty clay loam, and the lower part is dark-brown, mottled loam. The underlying material is dark-brown loamy fine sand.

Dexter soils are moderate in natural fertility and respond well to fertilization. They are easy to till and can be cultivated throughout a fairly wide range of moisture content. They are suited to most local crops. In places a plowpan below plow depth restricts root penetration and water movement. Permeability is moderate, and available water capacity is high. Most of the acreage is cultivated.

Representative profile of Dexter silt loam, 0 to 1 percent slopes, in a moist cultivated field, NW¼SE¼NE¼ sec. 6, T. 11 N., R. 3 W.

Ap—0 to 7 inches, brown (10YR 4/3) silt loam; weak, fine, granular structure; very friable; common fine roots; few, fine, dark concretions; neutral; abrupt, smooth boundary.

B21t—7 to 16 inches, dark-brown (7.5YR 4/4) silty clay loam; moderate, medium, subangular blocky structure; friable; common patchy clay films on ped faces; medium acid; clear, smooth boundary.

B22t—16 to 29 inches, dark-brown (7.5YR 4/4) silty clay loam; moderate, medium, subangular blocky structure; firm; continuous clay films on ped faces; few fine roots; few pores; common, fine and medium, dark concretions; strongly acid; gradual, wavy boundary.

B23t—29 to 48 inches, dark-brown (7.5YR 4/4) silty clay loam; some vertical ped surfaces are pale brown (10YR 6/3); moderate, medium, subangular blocky structure; firm; continuous clay films and a few black stains on ped faces; few pores; few, fine, dark concretions; very strongly acid; gradual, wavy boundary.

B3—48 to 63 inches, dark-brown (7.5YR 4/4) loam; common, medium, distinct, brown (10YR 5/3) mottles; moderate, medium, subangular blocky structure; friable; patchy clay films and few black stains on ped faces; pale-brown (10YR 6/3) silt in seams between some peds; very strongly acid; diffuse, wavy boundary.

IIC—63 to 72 inches, dark-brown (7.5YR 4/4) loamy fine sand; massive; very friable; few, fine, dark concretions; strongly acid.

The Ap horizon is brown or dark yellowish brown. The B2t horizon is silty clay loam, silt loam, or loam. Some profiles lack pale-brown ped surfaces in the B23t horizon. Texture of the C horizon ranges from loamy fine sand to loam. The A horizon is medium acid to neutral, the B21t horizon is strongly acid or medium acid, and the lower horizons are strongly acid or very strongly acid.

About 60 percent of the Dexter soils in mapping unit DeU have hues of 10YR in the B horizon, and are thus outside the defined range for the series. This difference does not alter the usefulness or behavior of the soil.

Dexter soils are associated with Amagon, Beulah, Bosket, and Dundee soils. They are less sandy throughout the A and B horizons than Beulah and Bosket soils, and they are browner and better drained than Amagon and Dundee soils.

Dexter silt loam, 0 to 1 percent slopes (De).—This soil has the profile described as representative of the series. It is on the higher parts of natural levees. Areas are generally 10 to 100 acres in size.

Included with this soil in mapping are a few areas of undulating soils, a few spots near Olyphant that contain strata of gravel, and a few small spots of Beulah and Bosket soils.

This Dexter soil is well suited to farming. It warms up early in spring and can be planted early. Under good management, clean-tilled crops that leave large amounts of residue can be grown year after year.

The main crops are cotton and soybeans. Other suitable crops are grain sorghum, corn, peanuts, and winter small grain (fig. 4). Truck crops, such as green beans, okra, sweet corn, strawberries, potatoes, tomatoes, and melons, can also be grown on this soil. Suitable pasture plants are bermudagrass, bahiagrass, and white clover. Capability unit I–1; woodland group 2o4.

Dexter silt loam, undulating (DeU).—This soil is chiefly on the tops and sides of natural levees, in areas of alternating long, narrow swales and ridges that rise 2 to 5 feet above the swales. Areas are generally 10 to 100 acres in size. Slope is less than 3 percent. The profile of this soil is similar to the one described as representative of the series, but in about 60 percent of the area, the subsoil is yellower.

Included with this soil in mapping are a few narrow escarpments and small spots of Beulah, Bosket, and Dundee soils.

This Dexter soil is well suited to farming, but erosion is a moderate hazard on the steeper slopes. This soil warms up early in spring and can be planted early. Under good management, clean-tilled crops that leave large amounts of residue can be grown year after year.

The main crops are cotton and soybeans. Other suitable crops are corn, grain sorghum, peanuts, winter small grain, and truck crops, such as okra, green beans, potatoes, sweet corn, tomatoes, melons, and strawberries. Suitable pasture plants are bermudagrass, bahiagrass, and white clover. Capability unit IIe–1; woodland group 2o4.

Dundee Series

The Dundee series consists of somewhat poorly drained, level and undulating soils on low parts of older natural levees along streams and abandoned river channels. These soils formed in stratified beds of loamy sediments.

In a representative profile the surface layer is silt loam about 12 inches thick. The upper 5 inches is very dark grayish brown, and the lower 7 inches is dark grayish brown. The subsoil extends to a depth of about 42 inches. The upper 12 inches is grayish-brown, mottled silty clay loam. The lower part is light brownish-gray, mottled silty clay loam. The underlying material is gray, mottled silt loam.

Dundee soils are moderate in natural fertility and respond well to fertilization. They are easy to till, but the surface puddles and crusts over after a rain. If they are drained and well managed, these soils are suited to most local crops. Permeability is moderately slow, and available water capacity is high. Most of the acreage is cultivated.

Representative profile of Dundee silt loam, 0 to 1 percent slopes, in a moist cultivated area, SW¼SE¼NW¼ sec. 15, T. 13 N., R. 3 W.

Ap—0 to 5 inches, very dark grayish-brown (10YR 3/2) silt loam; weak, medium, granular structure; friable; many fine roots; common worm holes and casts; strongly acid; abrupt, smooth boundary.

A1—5 to 12 inches, dark grayish-brown (10YR 4/2) silt loam; common fine roots; common dark concretions; very weak, medium, subangular blocky structure; friable; common fine roots; common dark concretions; very strongly acid; clear, wavy boundary.

B21t—12 to 24 inches, grayish-brown (10YR 5/2) silty clay loam; common, medium, distinct, brown (10YR 4/3) and yellowish-brown (10YR 5/8) mottles; moderate, medium, subangular blocky structure; firm; thin patchy clay films on ped faces and in pores; few fine roots; common dark concretions; very strongly acid; gradual, wavy boundary.

B22tg—24 to 32 inches, light brownish-gray (10YR 6/2) silty clay loam; common, medium, distinct, brown (10YR 4/3) mottles; moderate, medium, subangular blocky structure; firm; thin patchy clay films on ped faces; few fine roots; common dark concretions; very strongly acid; clear, wavy boundary.

B23tg—32 to 42 inches, light brownish-gray (10YR 6/2) silty clay loam; common, medium, distinct, brown (10YR 4/3) and yellowish-brown (10YR 5/8) mottles; moderate, medium, subangular blocky structure; firm; continuous clay films on ped faces and in pores; common dark concretions; very strongly acid; gradual, wavy boundary.

Cg—42 to 72 inches, gray (10YR 5/1) silt loam; common, medium, distinct, yellowish-brown (10YR 5/8) mottles; massive; friable; many dark concretions; very strongly acid.

The Ap horizon is dark grayish brown or very dark grayish brown. The A1 horizon is lacking in some profiles. The B21t horizon is dark grayish-brown or grayish-brown silt loam or silty clay loam. The B22tg and B23tg horizons are gray or light brownish-gray silty clay loam to clay loam. The C horizon ranges from silty clay to fine sandy loam. Reaction ranges from medium acid to very strongly acid throughout the profile.

Figure 4.—Wheat on Dexter silt loam, 0 to 1 percent slopes.

Dundee soils are associated with Beulah, Bosket, Dexter, Egam, Amagon, and Forestdale soils. They are grayer than Bosket, Dexter, and Egam soils and browner in the upper part of the B horizon than Amagon and Forestdale soils. Dundee soils are less clayey in the B horizon than Forestdale and Egam soils and less sandy in the B horizon than Beulah and Bosket soils.

Dundee silt loam, 0 to 1 percent slopes (DvA).—This soil has the profile described as representative of the series. It is on the lower parts of natural levees. Areas range from 20 to 200 acres in size.

Included with this soil in mapping are a few areas of undulating soils and spots of Bosket, Dexter, Egam, Amagon, and Forestdale soils.

This Dundee soil is suited to farming, but excess water is a moderate limitation. Fieldwork is often delayed several days after a rain unless surface drains are installed. Under good management that includes adequate drainage, clean-tilled crops that leave large amounts of residue can be grown year after year.

The main crops are soybeans and grain sorghum (fig. 5). Other suitable crops are cotton, rice, peanuts, winter small grain, and truck crops, such as okra, green beans, sweet corn, and tomatoes. Suitable pasture plants are bermudagrass, bahiagrass, tall fescue, and white clover. Capability unit IIw–1; woodland group 2w5.

Dundee silt loam, undulating (DvU).—This soil is generally on the lower parts of natural levees. It is in areas of alternating long, narrow swales and ridges that rise 2 to 5 feet above the swales. Areas range from 10 to 200 acres in size. Slopes are less than 3 percent.

Included with this soil in mapping are a few narrow escarpments, small level areas, and spots of Bosket, Dexter, Egam, Amagon, and Forestdale soils.

This Dundee soil is suited to farming, but wetness is a moderate limitation. After a rain, water collects in the swales and fields dry unevenly. Fieldwork is often delayed for several days after a rain unless surface drains are installed. Under good management that includes adequate drainage, clean-tilled crops that leave large amounts of residue can be grown year after year.

The main crops are soybeans and grain sorghum. Other suitable crops are cotton, corn, peanuts, winter small grain, and truck crops, such as okra, green beans, tomatoes, and sweet corn. Suitable pasture plants are bermudagrass, bahiagrass, tall fescue, and white clover. Capability unit IIw–1; woodland group 2w5.

Egam Series

The Egam series consists of moderately well drained, level soils on young natural levees on flood plains. These soils formed in stratified beds of loamy sediments.

In a representative profile the surface layer is dark-brown silt loam about 8 inches thick. The subsoil extends to a depth of more than 72 inches. The upper 14 inches is very dark grayish-brown silty clay loam; the next 24 inches is dark-brown silty clay loam; and the lower part is brown silt loam.

Egam soils are high in natural fertility. They respond well to fertilization and are easy to till. In most places they are subject to occasional flooding, but they are suited to most local crops. Permeability is moderately slow, and available water capacity is high. Most of the acreage is cultivated.

Representative profile of Egam silt loam in a moist cultivated area, NE¼SE¼SW¼ sec. 31, T. 12 N., R. 3 W.

Ap—0 to 8 inches, dark-brown (10YR 3/3) silt loam; weak, medium, subangular blocky structure; friable; common fine roots; few dark concretions; slightly acid; abrupt, smooth boundary.

B21—8 to 22 inches, very dark grayish-brown (10YR 3/2) silty clay loam; moderate, medium, subangular blocky structure; firm; few fine roots; few pores; few worm holes; glossy faces on some peds; neutral; gradual, wavy boundary.

B22—22 to 46 inches, dark-brown (10YR 3/3) silty clay loam; moderate, medium, subangular blocky structure; firm; few pores; few worm holes; glossy faces on some peds; slightly acid; diffuse boundary.

B23—46 to 72 inches, brown (10YR 4/3) silt loam; moderate, medium, subangular blocky structure; friable; few pores; medium acid.

The Ap horizon is very dark grayish brown or dark brown. Some profiles have an A12 horizon, 3 to 10 inches thick, of dark-brown to very dark grayish-brown silt loam. The B21 and B22 horizons are dark brown or very dark grayish brown. The B23 horizon is dark grayish-brown to brown silt loam or silty clay loam. In some places the B22 and B23 horizons are mottled dark gray or dark grayish brown. The Ap, B21, and B22 horizons are slightly acid or neutral, and the B23 horizon is medium acid to neutral.

Egam soils are associated with Dundee, Sharkey, and Staser soils. They are more clayey in the B horizon than Dundee soils and less clayey in the B horizon than Sharkey soils. Egam soils are thicker in the A horizon and browner in the B horizon than Sharkey soils. They have a B horizon and lack the bedding planes and thinly stratified C horizon typical of Staser soils.

Egam silt loam (Eg).—This soil is in areas ranging from 20 to more than 600 acres in size. Included in mapping are a few areas of undulating soils that have slopes up to 3 percent, narrow escarpments, and spots of Dundee, Sharkey, and Staser soils.

This Egam soil is suited to farming. Most areas are flooded occasionally, but floods rarely occur between June and January. Under good management, clean-tilled, warm-season crops that leave large amounts of residue can be grown year after year.

The main crops are soybeans and cotton. Other suitable crops are corn, grain sorghum, rice, and truck crops, such as okra, green beans, sweet corn, and tomatoes. Winter small grain can be grown, but the crop may be damaged by floods in some years. Suitable pasture plants are bermudagrass, tall fescue, bahiagrass, and white clover. Capability unit IIw-2; woodland group 2o4.

Enders Series

The Enders series consists of well-drained, gently sloping to moderately steep soils on uplands. These soils are on hillsides and hilltops. They formed in a thin layer of loamy material and in underlying clayey material that weathered from shale.

In a representative profile the surface layer is brown silt loam about 6 inches thick. The subsoil extends to a depth of about 33 inches. The upper 5 inches is yellowish-red loam; the next 9 inches is red, mottled clay; the next 7 inches is red and yellowish-brown, mottled clay; and the lower 6 inches is red and yellowish-red, mottled clay. The underlying material is gray and light-gray, mottled silty clay that extends to hard shale bedrock at a depth of about 41 inches.

Enders soils are low in natural fertility, but they respond moderately to fertilization. The surface layer is thin, and root penetration into the subsoil is slow. Permeability is very slow, and available water capacity is moderate to high.

These soils are generally unsuitable for cultivation, but they are suitable for pasture or range, wildlife, and woodland. Most of the acreage is wooded. A small part has been cleared.

Representative profile of Enders silt loam, 3 to 12 percent slopes, in a moist pasture, NW¼SW¼NE¼ sec. 17, T. 10 N., R. 4 W.

Ap—0 to 6 inches, brown (10YR 4/3) silt loam; weak, fine, subangular blocky structure; very friable; many fine roots; few, fine, dark concretions; few flecks of yellowish-red material from horizon below; few pebbles; neutral; clear, wavy boundary.

B1—6 to 11 inches, yellowish-red (5YR 5/8) loam; moderate, medium, subangular blocky structure; friable; few fine roots; few pores; about 10 percent, by volume, is pebbles; patchy clay films on ped faces; strongly acid; clear, smooth boundary.

B21t—11 to 20 inches, red (2.5YR 5/8) clay; few, medium, prominent, yellowish-brown (10YR 5/8) mottles; strong, medium, subangular blocky structure; firm; continuous clay films on ped faces; few fine roots; few pores; about 2 percent, by volume, is pebbles; very strongly acid; gradual, wavy boundary.

B22t—20 to 27 inches, equally mottled red (2.5YR 4/8) and yellowish-brown (10YR 5/8) clay; moderate, medium, subangular blocky structure; firm; continuous clay films on ped faces; few large dead roots; few pores; few shale fragments; very strongly acid; clear, smooth boundary.

B3—27 to 33 inches, equally mottled red (2.5YR 4/8) and yellowish-red (5YR 5/8) clay; weak, medium, subangular blocky structure; firm; common patchy clay films on ped faces; few large dead roots; few pores; common, gray, weathered shale fragments; very strongly acid; clear, wavy boundary.

C—33 to 41 inches, gray (10YR 6/1) and light-gray (10YR 7/2) weathered shale of silty clay texture; common, medium, prominent, yellowish-red (5YR 5/8) mottles; platy rock structure; friable; few hard shale fragments; very strongly acid; abrupt, wavy boundary.

R—41 inches, hard shale.

The Ap horizon is brown or dark yellowish brown. In wooded tracts the A11 horizon is dark grayish-brown or very dark grayish-brown silt loam or stony silt loam, 1 to 3 inches thick. The A12 horizon, 3 to 6 inches thick, is dark yellowish-brown or yellowish-brown silt loam or stony silt loam. The B1 horizon is yellowish-red or strong-brown loam or silty clay loam. The B2t horizon is yellowish-red or red clay or silty clay. Depth to shale bedrock is 40 to more than 60 inches. These soils are strongly acid to very strongly acid, but where the surface has been limed the Ap horizon ranges to neutral.

Enders soils are associated with Hector, Leadvale, Linker, and Mountainburg soils. They are more clayey in the B horizon than those soils and are underlain with shale instead of sandstone. Enders soils are deeper over bedrock than Hector and Mountainburg soils. They do not have a fragipan, which is typical of Leadvale soils. They are less sandy throughout the profile than Linker soils.

Enders silt loam, 3 to 12 percent slopes (EnD).—This soil has the profile described as representative of the series. It is on the crests and toe slopes of hills. Areas range from 20 to 150 acres in size.

Included with this soil in mapping are a few spots of Hector, Leadvale, Linker, and Mountainburg soils.

This Enders soil is unsuitable for cultivation, but can be used for pasture, range, wildlife, and timber. Runoff is rapid, and the hazard of erosion is severe.

Suitable pasture plants are bermudagrass, bahiagrass, annual lespedeza, and sericea lespedeza. Capability unit VIe-1; woodland group 4o1.

Enders stony silt loam, 12 to 25 percent slopes (EsE).—This soil is on hillsides. Areas range from 20 to 300

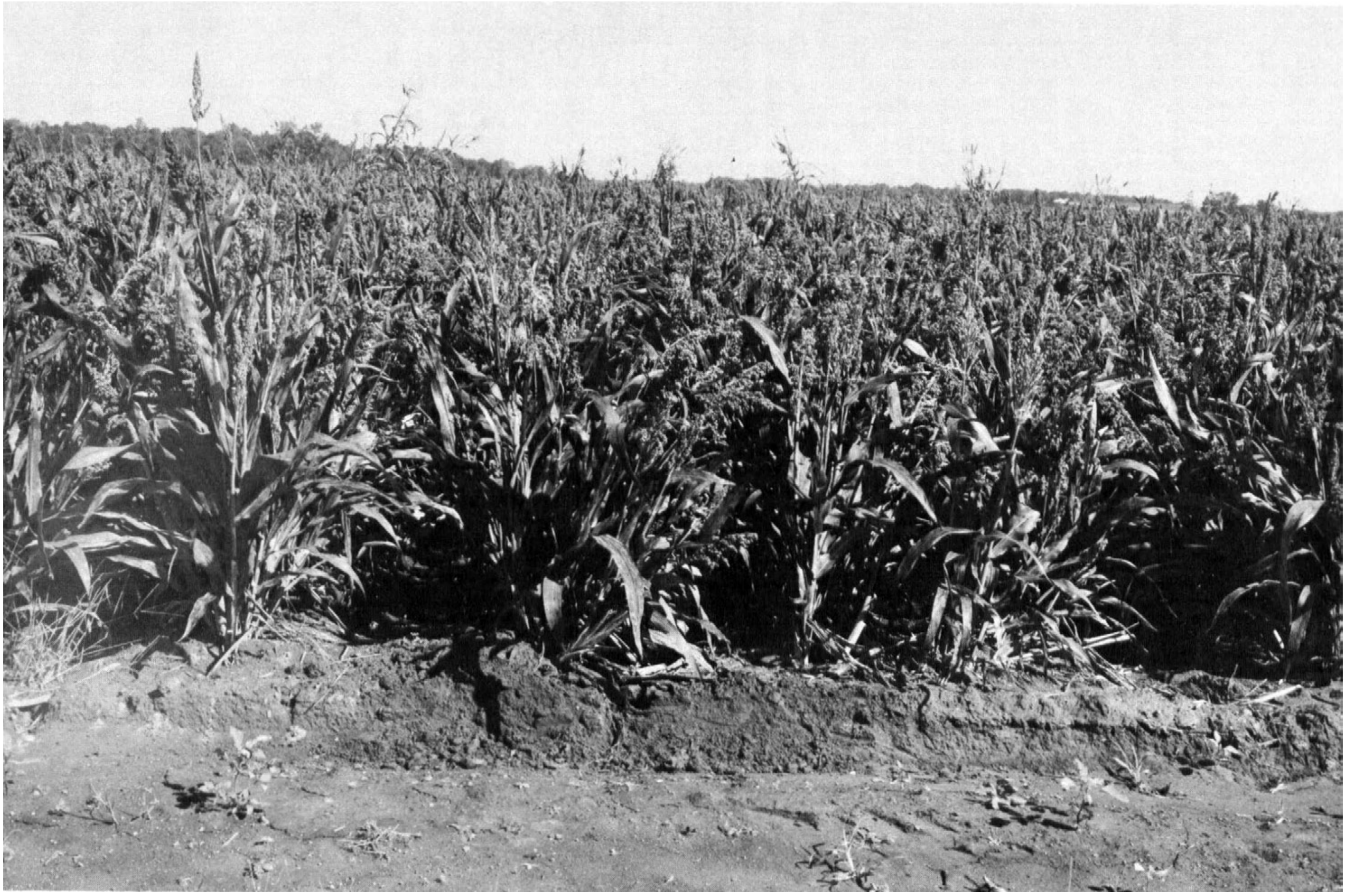

Figure 5.—**Grain sorghum growing on Dundee silt loam, 0 to 1 percent slopes.**

acres in size. This soil is stony, but otherwise has a profile similar to the one described as representative of the series.

Included with this soil in mapping are a few small areas in the vicinity of Possum Grape that have beds of rounded gravel at depths of 2 to 3 feet and a few gravel pits. Also included are spots of Hector, Leadville, Linker, and Mountainsburg soils.

This Enders soil is best suited to range, wildlife, and woodland. It is not suited to cultivated crops and is poorly suited to pasture. Stones and the strong slopes severely restrict the use of farm equipment. Runoff is rapid, and the hazard of erosion is very severe. Most of the acreage is wooded. Capability unit VIIs-1; woodland group 4x2.

Foley Series

The Foley series consists of poorly drained, level soils on broad flats. These soils formed in loamy sediments of eolian or alluvial origin.

In a representative profile the surface layer is brown silt loam about 7 inches thick. The 5-inch subsurface layer is grayish-brown, mottled silt loam. The subsoil extends to a depth of about 66 inches. The upper 10 inches is grayish-brown, mottled silty clay loam. It contains tongues of grayish-brown silt loam that extend down from the subsurface layer. The next 20 inches is grayish-brown, mottled silty clay loam. The lower part is grayish-brown and dark grayish-brown, mottled silt loam. The underlying material is yellowish-brown, mottled fine sandy loam.

Foley soils are moderate in natural fertility, but have a high concentration of sodium and magnesium below a depth of about 22 inches. They respond well to fertilization, but are somewhat droughty because few roots penetrate the middle part of the subsoil. They are easy to till, but the surface layer puddles and crusts after a rain. If drained and well managed, these soils are suited to most local crops. Permeability is slow, and available water capacity is moderate. Most of the acreage is cultivated.

Representative profile of Foley silt loam, in a moist cultivated area of Foley-Calhoun complex, NE¼NE¼ NW¼ sec. 6, T. 10 N., R. 2 W.

Ap—0 to 7 inches, brown (10YR 5/3) silt loam; weak, fine, granular structure; very friable; few fine roots; common dark concretions; medium acid; abrupt, smooth boundary.

A2g—7 to 12 inches, grayish-brown (10YR 5/2) silt loam; few, medium, distinct, light yellowish-brown (10YR 6/4)

and dark yellowish-brown (10YR 4/4) mottles; moderate, medium, subangular blocky structure; friable; few fine roots; few pores; common dark concretions; medium acid; clear, irregular boundary.

B21 & A—12 to 22 inches, grayish-brown (10YR 5/2) silty clay loam; few, fine, faint, gray mottles and distinct, yellowish-brown mottles; moderate, medium, subangular blocky structure; firm; continuous clay films on ped faces; few roots; few pores; few, medium, dark concretions; tongues of grayish-brown silt loam 1½ to 3 inches in diameter extend through the horizon at 12- to 18-inch intervals; medium acid; clear, wavy boundary.

B22tg—22 to 42 inches, grayish-brown (2.5Y 5/2) silty clay loam; common, fine, distinct, dark yellowish-brown mottles; moderate, coarse, prismatic structure parting to moderate, medium, subangular blocky structure; firm; patchy clay films on ped faces; few fine roots; few pores; few dark concretions; gray silt coatings on prism faces; few tongues of grayish-brown silt loam extending a few inches into the horizon; mildly alkaline; gradual, wavy boundary.

B23tg—42 to 53 inches, grayish-brown (10YR 5/2) silt loam; common, medium, faint, light brownish-gray (2.5Y 6/2) mottles; moderate, medium, subangular blocky structure; friable; patchy clay films on ped faces; few old root channels; few pores; few dark concretions; moderately alkaline; clear, wavy boundary.

B3g—53 to 66 inches, dark grayish-brown (10YR 4/2) silt loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, medium, subangular blocky structure; friable; few root channels; few pores; few dark concretions; neutral; clear, wavy boundary.

IIC—66 to 72 inches, yellowish-brown (10YR 5/4) fine sandy loam; common, medium, faint, grayish-brown (10YR 5/2) and few, fine, faint, gray mottles; massive; very friable; few clay plugs; neutral.

The Ap horizon is dark grayish brown, grayish brown, or brown. The A2g horizon is gray or grayish brown. The B2 horizon is grayish-brown or gray silt loam or silty clay loam. The B3g horizon is dark grayish-brown to gray silt loam or loam. The C horizon is silty clay loam to fine sandy loam or alternating thin layers of these textures. The A horizon is strongly acid to slightly acid. The B21 & A horizon is medium acid to neutral. The lower horizons are neutral to moderately alkaline.

Foley soils are associated with Amagon, Calhoun, Crowley, Hillemann, Lafe, and McCrory soils. Foley soils differ from Amagon soils in having tongues that extend from the A horizon into the B horizon. They are more alkaline in the B horizon than Amagon soils. They are shallower over alkaline layers than Calhoun soils, but deeper over those layers than Lafe soils. They are less clayey in the B horizon than Crowley soils. They do not have the red mottles in the B horizon that are typical of Hillemann soils. They are less sandy throughout the A and B horizons than McCrory soils.

Foley-Calhoun complex (Fc).—This complex is on broad flats. Areas are 10 to more than 600 acres in size. Slopes are less than 1 percent. The profiles of these soils are the ones described as representative of their respective series. About 60 percent of the complex is Foley silt loam, 30 percent is Calhoun silt loam, and 10 percent is spots of Amagon, Lafe (fig. 6), and McCrory soils, and soils similar to Calhoun soils, but slightly more sandy.

This complex is suited to farming, but excess water is a severe limitation. Fieldwork is delayed several days after a rain unless surface drains are installed. If fields are adequately drained, clean-tilled crops that leave large amounts of residue can be grown year after year. If the soils are to be graded and smoothed, the depth to the sodium-affected layers in the subsoil should be determined before cuts are made. If sodium-affected material is brought near the surface, productivity is impaired.

The main crop is soybeans, but grain sorghum and rice are also grown. Winter small grain can be grown where surface drainage is adequate. Suitable pasture plants are bermudagrass, bahiagrass, tall fescue, annual lespedeza, and white clover. Capability unit IIIw-3; woodland group 3w9.

Foley-Calhoun-McCrory complex (Fm).—This complex is on broad flats and the lower parts of natural levees. Areas are 10 to more than 600 acres in size. Slopes are less than 1 percent. The McCrory soils in this mapping unit have the profile described as representative of the McCrory series. About 50 percent of the acreage is Foley silt loam, 25 percent Calhoun silt loam, and 15 percent McCrory fine sandy loam. The remaining 10 percent is spots of Amagon, Lafe, and Patterson soils.

This complex is suited to farming, but excess water is a severe limitation. Fieldwork is delayed several days after a rain unless surface drains are installed. If fields are adequately drained, clean-tilled crops that leave large amounts of residue can be grown year after year. If the soils are to be graded and smoothed, the depth to the sodium-affected layers in the subsoil should be determined before cuts are made. If sodium-affected material is brought near the surface, productivity is impaired.

The main crop is soybeans, but grain sorghum and rice are also grown. Winter small grain can be grown where surface drainage is adequate. Suitable pasture plants are bermudagrass, bahiagrass, tall fescue, annual lespedeza, and white clover. Capability unit IIIw-3; woodland group 3w9.

Forestdale Series

The Forestdale series consists of poorly drained, level soils along natural drains and in depressed areas within wide, higher-lying natural levees. These soils formed in stratified beds of loamy and clayey sediments.

In a representative profile the surface layer is about 7 inches of dark grayish-brown silt loam underlain by about 7 inches of gray, mottled silt loam. The subsoil extends to a depth of 72 inches or more. The upper 12 inches is gray, mottled silty clay loam. The next 21 inches is dark grayish-brown, mottled silty clay. The lower part is olive-gray, mottled silty clay.

Forestdale soils are moderate to high in natural fertility, and they respond well to fertilization. Where the surface layer is silt loam, these soils are easy to till, but the surface puddles and crusts after a rain. Where it is silty clay loam, preparing a seedbed and maintaining good tilth are somewhat difficult. These soils shrink and crack as they dry; when wet, they expand and the cracks seal. If they are plowed when wet, hard clods form. If drained and well managed, these soils are suited to most local crops. Permeability is very slow, and the available water capacity is high. Most of the acreage is cultivated.

Representative profile of Forestdale silt loam, in a moist cultivated area of Amagon and Forestdale silt loams, NW¼SW¼SW¼ sec. 1, T. 10 N., R. 1 W.

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) silt loam; weak, medium, subangular blocky structure; friable; few roots; few dark concretions; strongly acid; abrupt, smooth boundary.

A1—7 to 14 inches, gray (10YR 6/1) silt loam; common, fine, faint, dark grayish-brown mottles; weak, medium,

Figure 6.—**Dwarfed soybean plants in foreground are on an included spot of Lafe silt loam; healthy plants in background are on Foley and Calhoun soils.**

subangular blocky structure; friable; few roots; common pores; few dark concretions; very strongly acid; clear, wavy boundary.

B21tg—14 to 26 inches, gray (10YR 6/1) silty clay loam; common, medium, faint, light brownish-gray (10YR 6/2) and grayish-brown (10YR 5/2) mottles; moderate, medium, subangular blocky structure; friable; continuous clay films on ped faces; few roots; common pores; common dark concretions; very strongly acid; clear, smooth boundary.

B22tg—26 to 47 inches, dark grayish-brown (10YR 4/2) silty clay; common, medium, distinct, yellowish-brown (10YR 5/4) mottles; moderate, medium, subangular blocky structure; firm; continuous clay films on ped faces; few roots; few pores; few dark concretions; very strongly acid; clear, smooth boundary.

B23tg—47 to 72 inches, olive-gray (5Y 5/2) silty clay; few, fine, prominent, yellowish-brown mottles; moderate, medium, subangular blocky structure; firm; continuous clay films on ped faces; silt coatings on vertical faces of some peds; few root channels; few dark concretions; very strongly acid.

The Ap horizon is dark grayish-brown or grayish-brown silt loam or silty clay loam. In cultivated areas the A1 horizon, if present, is gray or grayish-brown silt loam or silty clay loam. The B21tg horizon is gray or dark-gray silty clay or silty clay loam. The B22tg and B23tg horizons are dark grayish-brown to olive-gray clay or silty clay. Some profiles have a C horizon of gray to olive-gray fine sandy loam to clay beginning at a depth of 48 inches or more. The A horizon is medium acid to very strongly acid. The B horizon is strongly acid or very strongly acid.

Forestdale soils are associated with Amagon, Crowley, Dundee, and Sharkey soils. They are more clayey in the B horizon than Amagon and Dundee soils. They do not have the abrupt textural change between the A and B horizons characteristic of Crowley soils, and they are more acid in the lower part of the B horizon than Crowley soils. They are more acid and less clayey in the B horizon than Sharkey soils.

Forestdale silty clay loam (Fo).—This soil is on the low parts of natural levees. Areas range from 10 to more than 600 acres in size. Slopes are less than 1 percent. The profile of this soil is similar to the one described as representative of the series, but the surface layer has a higher clay content.

Included with this soil in mapping are a few undulating areas and spots of Amagon, Crowley, Dundee, and Sharkey soils.

This Forestdale soil is suited to farming, but excess water is a severe limitation. Fieldwork is delayed for several days after a rain unless surface drains are installed. If fields are adequately drained, clean-tilled crops that leave large amounts of residue can be grown year after year.

The main crops are soybeans and rice. Other suitable crops are grain sorghum and cotton. Winter small grain can be grown where surface drainage is adequate. Suitable pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-4; woodland group 1w6.

Grubbs Series

The Grubbs series consists of somewhat poorly drained, level soils on broad flats. These soils formed in a thin layer of loamy sediments and in underlying clayey sediments.

In a representative profile the surface layer is brown silt loam about 8 inches thick. The subsoil extends to a depth of about 60 inches. The upper 14 inches is red, mottled clay. The next 8 inches is brown, mottled silty clay. The lower part is grayish-brown, mottled silt loam. The underlying material is brown and light brownish-gray mottled loam.

Grubbs soils are moderate in natural fertility and respond well to fertilization. They are suited to most local crops. They are easy to till and can be cultivated throughout a fairly wide range of moisture content. Permeability is very slow, and available water capacity is moderate to high. Most of the acreage is cultivated.

Representative profile of Grubbs silt loam, in a moist cultivated area, SE¼SW¼NW¼ sec. 27, T. 10 N., R. 2 W.

Ap—0 to 8 inches, brown (10YR 4/3) silt loam; weak, fine, granular structure; very friable; few roots; few, fine, dark concretions; medium acid; abrupt, smooth boundary.

B21t—8 to 22 inches, red (2.5YR 4/6) clay; common, fine and medium, prominent, grayish-brown (2.5Y 5/2) mottles; moderate, medium, subangular blocky structure; firm; continuous clay films on ped faces; few fine roots; few pores; few dark concretions; very strongly acid; clear, wavy boundary.

B22t—22 to 30 inches, brown (7.5YR 4/4) silty clay; common, fine, distinct, grayish-brown mottles; moderate, medium, subangular blocky structure; firm; continuous clay films and many black stains on ped faces; few root channels; few pores; many dark concretions; strongly acid; clear, wavy boundary.

B23tg—30 to 39 inches, grayish-brown (10YR 5/2) silt loam; common, medium, prominent, dark yellowish-brown (10YR 4/4) mottles; moderate, coarse, prismatic parting to moderate, medium, subangular blocky structure; friable; continuous clay films and many black stains on ped faces; common root channels lined with black stains; few pores; neutral; gradual, wavy boundary.

B3g—39 to 60 inches, grayish-brown (10YR 5/2) silt loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; moderate, medium, subangular blocky structure; friable; few pores; few dark stains; few dark concretions; moderately alkaline; clear, smooth boundary.

C1—60 to 65 inches, brown (10YR 4/3) loam; few, medium, distinct, gray (10YR 6/1) mottles; massive; very friable; few root channels filled with gray loam; few pores; moderately alkaline; clear, wavy boundary.

C2—65 to 72 inches, light brownish-gray (2.5Y 6/2) loam; few, medium, distinct, brownish-yellow (10YR 6/6) and brown (10YR 4/3) mottles; massive; very friable; few dark concretions; moderately alkaline.

The Ap horizon is dark grayish brown or brown. In some cultivated areas the A1 horizon is 3 to 6 inches of yellowish-brown silt loam mottled with gray or grayish brown. The B21t horizon is red or yellowish-red clay or silty clay that has grayish brown or gray mottles. The B22t horizon is silty clay or clay. The B23tg horizon is grayish-brown to olive-gray silt loam to silty clay. The B3g horizon is olive-gray to grayish-brown silt loam or silty clay loam. The C horizon is gray to brown fine sandy loam to silt loam. The A horizon is strongly acid to slightly acid. The B21t and B22t horizons are very strongly acid to medium acid. The lower horizons are slightly acid to moderately alkaline.

Grubbs soils are associated with Crowley, Foley, Hillemann, and Jackport soils. They are redder in the upper part of the B2t horizon that those soils. They are more clayey in the B2t horizon than Foley and Hillemann soils. They have a high concentration of sodium that begins deeper in the profile than in Foley and Hillemann soils.

Grubbs silt loam (Gb).—This soil is adjacent to escarpments leading down to old river channels. Areas range from 10 to 200 acres in size. Slopes are less than 1 percent.

Included with this soil in mapping are a few low rises where slopes are 1 to 3 percent, a few narrow escarpments, and spots of Crowley, Foley, and Hillemann soils.

This Grubbs soil is suited to farming, but excess water is a severe limitation. Fieldwork may be delayed several days after a rain unless surface drains are provided. Under good management that includes adequate drainage, clean-tilled crops that leave large amounts of residue can be grown year after year. If the soils are to be graded and smoothed, the depth to the clayey subsoil should be determined before cuts are made. The subsoil is plastic and sticky and is difficult to cultivate when exposed at the surface by grading.

The main crops are cotton and soybeans. Other suitable crops are corn, grain sorghum, rice, winter small grain, and truck crops, such as okra, green beans, and sweet corn. Suitable pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw–2; woodland group 3w8.

Hector Series

The Hector series consists of well-drained, moderately steep to steep, upland soils on hillsides. These soils formed in loamy material weathered from sandstone.

In a representative profile the surface layer is brown stony fine sandy loam about 5 inches thick. The subsoil is reddish-brown stony fine sandy loam about 7 inches thick. It is underlain by sandstone bedrock.

Hector soils are shallow, stony, and droughty and are low in natural fertility. They are suited to native pasture, wildlife, or woodland. They are not suited to cultivated crops or improved pasture because they are droughty, and because stones and slopes severely restrict the use of farm equipment. Permeability is moderately rapid, and available water capacity is low. Most of the acreage is woodland or savanna.

The Hector soils in this county are mapped only with Linker soils.

Representative profile of Hector stony fine sandy loam, in a moist wooded area of Linker-Hector complex, 12 to 40 percent slopes, NW¼SE¼SE¼ sec. 20, T. 10 N., R. 4 W.

A1—0 to 5 inches, brown (10YR 4/3) stony fine sandy loam; weak, medium, granular structure; very friable; many fine roots; few wormholes and casts; about 20 percent, by volume, is sandstone fragments ½ inch to 2 feet in diameter; medium acid; clear, wavy boundary.

B—5 to 12 inches, reddish-brown (5YR 4/4) stony fine sandy loam; weak, fine, subangular blocky structure; friable; common roots; about 25 percent, by volume, is sandstone fragments up to 10 inches in diameter; strongly acid; abrupt, irregular boundary.

R—12 inches, massive sandstone.

The A1 horizon is brown to very dark grayish brown. Some profiles have an A2 horizon of brown to dark yellowish-brown stony fine sandy loam. The B horizon is reddish-brown to brown fine sandy loam or stony fine sandy loam. Coarse fragments are 20 to 35 percent of the volume throughout the profile. Sandstone bedrock is at a depth of 9 to 18 inches. The soil is medium acid to very strongly acid throughout.

Hector soils are associated with Enders, Leadvale, Linker, and Mountainburg soils. They do not have the horizons of clay accumulation typical of the associated soils. They are shallower over bedrock than Enders, Leadvale, and Linker soils.

They are less clayey in the B horizon than Enders soils and more sandy in the B horizon than Leadvale soils.

Hillemann Series

The Hillemann series consists of somewhat poorly drained, level soils on broad flats. These soils formed in predominantly loamy sediments of eolian or alluvial origin.

In a representative profile the surface layer is dark grayish-brown silt loam about 6 inches thick. The subsurface layer, about 10 inches thick, is grayish-brown, mottled silt loam. The subsoil extends to a depth of about 55 inches. The upper 7 inches is grayish-brown, mottled silty clay loam. The lower part is grayish-brown, mottled silt loam. The underlying material is olive-gray, mottled clay.

Hillemann soils are moderate in natural fertility and respond well to fertilization. They have a high concentration of sodium and magnesium below a depth of about 23 inches. They are easy to till, but the surface puddles and crusts after a rain. If drained and well managed, these soils are suited to most local crops. Permeability is slow, and available water capacity is moderate to high. Most of the acreage is cultivated.

The Hillemann soils in this county are mapped only with Crowley soils.

Representative profile of Hillemann silt loam in an area of Crowley and Hillemann silt loams, in a moist cultivated field, SW¼SE¼SE¼ sec. 1, T. 10 N., R. 1 W.

Ap—0 to 6 inches, dark grayish-brown (10YR 4/2) silt loam; weak, medium, subangular blocky structure; friable; many fine roots; common dark concretions; medium acid; abrupt, smooth boundary.

A21—6 to 11 inches, grayish-brown (10YR 5/2) silt loam; common, fine, distinct, dark yellowish-brown mottles; common, fine, distinct, yellowish-red stains along root channels; weak, medium, subangular blocky structure; friable; few fine roots; few pores; few dark concretions; strongly acid; clear, wavy boundary.

A22—11 to 16 inches, grayish-brown (10YR 5/2) silt loam; common, medium, distinct, yellowish-brown (10YR 5/6) mottles; moderate, medium, subangular blocky structure; friable; few fine roots; few pores; few dark concretions; strongly acid; clear, wavy boundary.

B21t—16 to 23 inches, grayish-brown (10YR 5/2) silty clay loam; common, medium, prominent, red (2.5YR 4/8) and few, medium, prominent, yellowish-red (5YR 4/8) mottles; moderate, medium, subangular blocky structure; firm; vertical ped faces in upper 3 inches coated with gray silt; continuous clay films on most ped faces; few roots; few pores; few dark concretions; strongly acid; clear, wavy boundary.

B22t—23 to 38 inches, grayish-brown (10YR 5/2) silt loam; common, medium, distinct, yellowish-brown (10YR 5/4) and dark-brown (10YR 4/3) mottles; moderate, medium, subangular blocky structure; friable; patchy clay films on ped faces; few roots; few pores; few dark concretions; strongly acid; gradual, wavy boundary.

B3—38 to 55 inches, grayish-brown (10YR 5/2) silt loam; common, medium, distinct, yellowish-brown (10YR 5/6) mottles; weak, medium, subangular blocky structure; patchy clay films on ped faces; friable; few medium roots; common pores; few dark concretions; neutral; gradual, wavy boundary.

IIC—55 to 72 inches, olive-gray (5Y 5/2) clay; few, medium, prominent, reddish-brown (5YR 4/4) mottles; weak, medium, angular blocky structure; firm; few medium roots; few pores; common dark concretions; few black stains on ped faces; neutral.

The Ap horizon is dark grayish brown or brown. The A2 horizon is gray or grayish brown and has few to common mottles. Depth to the B2t horizon is 10 to 24 inches. The B21t horizon is grayish-brown or light brownish-gray silty clay loam or silty clay that has few to many red or yellowish-red mottles. The B22t horizon is grayish-brown or light brownish-gray silty clay loam or silt loam that has few to common mottles. The B3 horizon is gray to brown and has yellowish-brown or gray mottles. The IIC horizon ranges from fine sandy loam to clay. In some profiles the IIC horizon is lacking. The Ap horizon is strongly acid to medium acid. The A2 horizon is very strongly acid to medium acid. The B2t horizon is strongly acid or very strongly acid. The B3 and IIC horizons are slightly acid to mildly alkaline.

Hillemann soils are associated with Crowley, Foley, and Calhoun soils. They are less clayey in the B horizon than Crowley soils and do not have the abrupt texture change between the A and B horizons typical of those soils. Hillemann soils are more acid in the B2t horizon than Foley soils and have red mottles in the B2t horizon that are lacking in Foley and Calhoun soils.

Jackport Series

The Jackport series consists of somewhat poorly drained, level soils in abandoned back swamps. These soils formed in beds of predominantly clayey sediments.

In a representative profile the surface layer is dark grayish-brown silty clay loam about 4 inches thick. The subsoil extends to a depth of about 46 inches. The upper 6 inches is dark grayish-brown, mottled silty clay. The next 23 inches is grayish-brown and olive-gray, mottled clay. The lower part is olive-gray, mottled silty clay. The underlying material is light brownish-gray, mottled silty clay loam.

Jackport soils are moderate in natural fertility and respond well to fertilization. The surface layer forms clods if plowed when too wet, and seedbed preparation is somewhat difficult. These soils shrink and crack when they dry, but when wet they expand and the cracks seal. If drained, these soils are suited to most local crops. Permeability is very slow, and available water capacity is high. About 90 percent of the acreage is cultivated.

Representative profile of Jackport silty clay loam, in a moist cultivated area, NW¼NW¼NE¼ sec. 29, T. 9 N., R. 1 W.

Ap—0 to 4 inches, dark grayish-brown (10YR 4/2) silty clay loam; common, fine, distinct, yellowish-brown mottles; weak, fine, subangular blocky structure; firm; common shreds of organic residue; common fine roots; few, fine, dark concretions; medium acid; abrupt, wavy boundary.

B21tg—4 to 10 inches, dark grayish-brown (2.5Y 4/2) silty clay; many, coarse, distinct, yellowish-brown (10YR 5/8) mottles; fine threadlike streaks of yellowish brown along roots; moderate, medium, subangular blocky structure; firm; peds have shiny faces; many fine roots; few, fine, dark concretions; very strongly acid; gradual, smooth boundary.

B22tg—10 to 21 inches, grayish-brown (2.5Y 5/2) clay; common, fine, prominent, dark yellowish-brown and strong-brown threadlike streaks along root channels; moderate, medium, subangular blocky structure; firm; common fine, and few medium roots; few, fine, dark concretions; few slickensides; common pressure faces; peds have shiny faces; very strongly acid; clear, wavy boundary.

B23tg—21 to 33 inches, olive-gray (5Y 5/2) clay; few, medium, prominent, dark yellowish-brown (10YR 4/4) mottles and common threadlike streaks along root channels; few, tubular, greenish-gray (5GY 5/1) streaks ½ inch to 2 inches in diameter along dead

tree roots; strong, medium and coarse, angular blocky structure; firm; common fine roots; few slickensides; few, fine, dark concretions; very strongly acid; gradual, wavy boundary.

B3g—33 to 46 inches, olive-gray (5Y 5/2) silty clay; common tubular streaks of greenish gray (5GY 5/1) ¼ inch to 2 inches in diameter along dead tree roots; moderate, medium, subangular blocky structure; firm; common fine, and few medium roots; few slickensides; few, fine, dark concretions; peds have shiny faces; very strongly acid; clear, wavy boundary.

Cg—46 to 65 inches, light brownish-gray (2.5Y 6/2) silty clay loam; few, medium, faint gray (10YR 5/1) and common, medium, faint, light yellowish-brown (2.5Y 6/4) mottles; weak, medium, subangular blocky structure; firm; few vertical plugs of grayish-brown (2.5Y 5/2) silty clay ½ to 1 inch in diameter; few fine dead roots; few pockets and seams of clear, soft crystals; common, fine, dark concretions; medium acid.

The Ap horizon is grayish brown to very dark grayish brown. The B horizon is dark grayish brown to olive gray. In some areas it is clay throughout. The B21tg horizon is clay or silty clay. The B3g horizon is clay to silty clay loam. The C horizon is grayish-brown, light brownish-gray, olive-gray, or gray clay to silt loam. Some profiles have a IIC horizon of fine sandy loam or very fine sandy loam beginning at a depth of 48 inches or more. The A horizon is strongly acid or medium acid. The B2 horizon is strongly acid or very strongly acid. The B3 horizon is very strongly acid to slightly acid. The C horizon is strongly acid to neutral.

Jackport soils are associated with Crowley and Grubbs soils. They do not have the red mottling typical of the associated soils and are finer textured in the A horizon. They do not have an A2 horizon, which is typical of Crowley soils, and they are grayer in the B21t horizon than Grubbs soils.

Jackport silty clay loam (Jo).—This soil is in broad depressions. Areas range from 20 to more than 600 acres in size. Slopes are less than 1 percent.

Included with this soil in mapping are a few areas where slopes are 1 to 3 percent, a few narrow escarpments, and spots of Crowley and Grubbs soils.

This Jackport soil is suited to farming, but excess water is a severe limitation. Fieldwork is often delayed several days after a rain unless surface drains are installed to prevent ponding (fig. 7). Under good management that includes adequate drainage, clean-tilled crops that leave large amounts of residue can be grown year after year.

The main crop is soybeans. Other suitable crops are rice and grain sorghum. Winter small grain can be grown where surface drainage is adequate. Suitable pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-4; woodland group 2w6.

Lafe Series

The Lafe series consists of somewhat poorly drained, level soils on upland flats. These soils formed in beds of loamy sediments of eolian or alluvial origin.

In a representative profile the surface layer is dark grayish-brown silt loam about 7 inches thick. The subsoil extends to a depth of about 58 inches. The upper 17 inches is yellowish-brown, mottled silty clay loam. The lower part is grayish-brown and yellowish-brown, mottled silt loam and fine sandy loam. The underlying material is yellowish-brown, mottled fine sandy loam.

Lafe soils are poorly suited to most crops, but are cultivated in some areas. They are low in natural fertility. They have a high concentration of sodium and magnesium throughout the subsoil and respond poorly to fertilization. The surface puddles easily and crusts after a rain. Permeability is very slow, and available water capacity is low. Most of the acreage is idle or used for native pasture and wildlife; some of it is woodland.

Representative profile of Lafe silt loam, in a moist idle area, NW¼NE¼NE¼ sec. 30, T. 9 N., R. 2 W.

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) silt loam; weak, medium, subangular blocky structure; friable; few fine roots; common dark concretions; medium acid; clear, wavy boundary.

B21t—7 to 13 inches, yellowish-brown (10YR 5/4) silty clay loam; moderate, medium, subangular blocky structure; firm; continuous clay films on ped faces; few roots; few pores; few dark concretions; gray (10YR 6/1) silt coatings on faces of some peds and as tongues up to 1 inch in diameter between peds; medium acid; clear, wavy boundary.

B22t—13 to 24 inches, yellowish-brown (10YR 5/4) silty clay loam; few, medium, faint, brown (10YR 4/3) and common, medium, faint, grayish-brown (10YR 5/2) mottles; moderate, coarse, prismatic parting to moderate, medium, subangular blocky structure; very firm; continuous clay films on ped faces; few fine roots; few pores; coatings of pale-brown (10YR 6/3) and gray (10YR 6/1) silt loam on some ped faces and as tongues up to 1 inch wide between prisms; moderately alkaline; gradual, smooth boundary.

B23t—24 to 37 inches, grayish-brown (2.5Y 5/2) silt loam; common, medium, distinct, brown (10YR 5/3) and yellowish-brown (10YR 5/6) mottles; moderate, medium, prismatic parting to moderate, medium, subangular blocky structure; very firm; continuous clay films on ped faces; few fine roots; few pores; few white crystals; gray silt coats on faces of some prisms; strongly alkaline; clear, wavy boundary.

IIB24t—37 to 47 inches, grayish-brown (10YR 5/2) fine sandy loam; common, medium, faint, dark yellowish-brown (10YR 4/4) mottles; weak, coarse, prismatic structure; very firm; few old root cortices; few pores; moderately alkaline; gradual, wavy boundary.

IIB3—47 to 58 inches, yellowish-brown (10YR 5/4) fine sandy loam; few, coarse, distinct, gray (10YR 6/1) mottles; weak, coarse, subangular blocky structure; very friable; few pores; few, fine, dark concretions; moderately alkaline; clear, wavy boundary.

IIC—58 to 72 inches, yellowish-brown (10YR 5/5) fine sandy loam; few, medium, faint, dark yellowish-brown (10YR 4/4) mottles; platy rock structure; common bedding planes; firm; few pores; few, fine and medium, dark concretions; strongly alkaline.

The Ap or A1 horizon is dark grayish brown or grayish brown. The A2g horizon, where present, is gray or grayish-brown silt loam. The B horizon is silt loam or silty clay loam. The B21t horizon is pale brown to yellowish brown. The B22t horizon is yellowish brown to pale brown or is mottled in shades of brown. In some profiles the IIB and IIC horizons are lacking, and silt loam or silty clay loam textures extend to a depth of more than 72 inches. The A horizon is strongly acid to slightly acid. The B21t horizon is medium acid to neutral. The lower horizons are mildly alkaline to strongly alkaline.

Lafe soils are associated with Foley and Calhoun soils. They have high concentrations of sodium and magnesium nearer the surface than those soils.

Lafe silt loam (Lo).—This soil is on broad flats and in slight depressions. Areas range from 10 to 100 acres in size. Slopes are generally less than 1 percent. Included with this soil in mapping are spots of Calhoun and Foley soils.

This Lafe soil is suited to native pasture and wildlife habitat (fig. 8). Droughtiness and the high concentration of sodium and magnesium throughout the subsoil make this soil poorly suited to farming. Plants that

Figure 7.—Temporary surface drain in a field of soybeans. The soil is Jackport silty clay loam.

Figure 8.—Commercial catfish farming is an alternative use of Lafe silt loam. This soil is poorly suited to field crops and improved pasture, but soil characteristics are generally favorable to use of the soil for ponds.

grow on this soil are stunted and commonly die before they mature. In a few areas that are cultivated, the main crops are soybeans and grain sorghum. Where surface drainage is adequate, shallow-rooted, cool-season plants survive better than warm-season crops. Pasture plants most likely to survive on this soil are bermudagrass and annual lespedeza. Capability unit VIs-1; woodland group 5t0.

Leadvale Series

The Leadvale series consists of moderately well-drained, nearly level to moderately sloping soils on hilltops, hillside benches, toe slopes, and old stream terraces on uplands. These soils formed in loamy material weathered from rocks high in content of silt and in old alluvium washed from uplands of weathered sandstone, siltstone, and shale.

In a representative profile the surface layer is brown silt loam about 7 inches thick. The subsoil extends to a depth of about 60 inches. The upper 10 inches is strong-brown, friable silt loam. The next 7 inches is yellowish-brown, friable silt loam. The next 8 inches is yellowish-brown, mottled, firm and brittle silt loam. The next 14 inches is strong-brown, mottled, firm and brittle clay loam. The lower 14 inches is brownish-yellow, mottled, firm and brittle sandy clay loam. Below this is sandstone bedrock.

Leadvale soils are low in natural fertility and respond well to fertilization. Where it is not stony, the surface layer is easy to till. The firm, brittle layer in the lower part of the subsoil is a fragipan that restricts root penetration and slows the movement of water through the soil. When erosion is controlled, some of these soils are suited to cultivation. Permeability is moderately slow, and available water capacity is moderate. A small part of the acreage is used for truck crops, but most is pasture and woodland.

Representative profile of Leadvale silt loam, 3 to 8 percent slopes, in a moist cultivated field, SE¼SE¼SE¼ sec. 28, T. 10 N., R. 5 W.

Ap—0 to 7 inches, brown (10YR 4/3) silt loam; weak, fine, granular structure; very friable; few roots; few, fine, dark concretions; strongly acid; abrupt, smooth boundary.

B221t—7 to 77 inches, strong-brown (7.5YR 5/6) silt loam; moderate, medium, subangular blocky structure; friable; patchy clay films on ped faces and in pores; few roots; few pores; few, fine, dark concretions; very strongly acid; clear, smooth boundary.

B22t—17 to 24 inches, yellowish-brown (10YR 5/8) silt loam; common, medium, distinct, strong-brown (7.5YR 5/6) mottles; moderate, medium, subangular blocky structure; friable; patchy clay films on ped faces and in pores; few roots; few pores; few, fine, dark concretions; very strongly acid; clear, wavy boundary.

Bx1—24 to 32 inches, yellowish-brown (10YR 5/8) silt loam; common, medium, distinct, gray (10YR 6/1) and grayish-brown (10YR 5/2) mottles; moderate, medium, subangular blocky structure; firm; brittle; continuous clay films on ped faces and in pores; few fine roots; few pores; few, fine, dark concretions; very strongly acid; clear, wavy boundary.

Bx2—32 to 46 inches, strong-brown (7.5YR 5/6) clay loam; few, fine and medium, distinct, yellowish-red (5YR 5/8) and many, medium, prominent, gray (10YR 6/1) mottles; moderate, coarse, prismatic structure; firm; brittle; continuous clay films on ped faces and in pores; few fine roots; few pores; common silt coatings on faces of some peds; very strongly acid; clear, wavy boundary.

Bx3—46 to 60 inches, brownish-yellow (10YR 6/8) sandy clay loam; common, medium, distinct, gray (10YR 6/1) mottles; moderate, coarse, prismatic structure; firm; brittle; common sandstone fragments; streaks of gray clay in seams between some peds; very strongly acid; abrupt, irregular boundary.

R—60 inches, sandstone bedrock.

The A1 or Ap horizon is brown to very dark grayish brown. The A2 horizon, where present, is brown or yellowish-brown silt loam. In some areas the A horizon is stony. The B21t and B22t horizons are silt loam or silty clay loam. The Bx horizon is silt loam to clay loam. It is at a depth of 20 to 30 inches. In places it is underlain by a IIC horizon of gray, mottled silty clay or clay. Depth to bedrock is 3 to 6 feet or more. The A horizon is slightly acid to strongly acid. The B horizon is strongly acid or very strongly acid.

Leadvale soils are associated with Enders, Linker, Hector, and Mountainburg soils. In contrast with those soils, they have a fragipan. They have more silt and less clay in the B horizon than Enders soils. They have more silt and less sand in the A and B2t horizons than Linker soils. They are deeper over bedrock and are less sandy than Hector and Mountainburg soils.

Leadvale silt loam, 1 to 3 percent slopes (LdB).—This soil is on long, narrow toe slopes of hills and on terraces along drainageways. Areas range from 10 to 100 acres in size.

Included with this soil in mapping are a few small wet spots and spots that are yellowish red in the upper part of the subsoil.

This Leadvale soil is suited to farming, but the hazard of erosion is moderate. Under good management that includes contour cultivation and terracing on long slopes, clean-tilled crops that leave large amounts of residue can be grown year after year. Sown crops may be grown without attention to row direction.

The main crops are soybeans, grain sorghum, winter small grain, and truck crops, such as okra, strawberries (fig. 9), and potatoes. Other suitable crops are melons, cucumbers, tomatoes, and green beans. Most of the acreage is used for pasture. Suitable pasture plants are bahiagrass, bermudagrass, tall fescue, white clover, sericea lespedeza, and annual lespedeza. Capability unit IIe-2; woodland group 4o7.

Leadvale silt loam, 3 to 8 percent slopes (LdC).—This soil has the profile described as representative of the series. It is on the tops and toe slopes of hills. Areas range from 10 to 300 acres in size.

Included with this soil in mapping are a few small areas where slopes are as much as 12 percent, a few spots that are yellowish red in the upper part of the subsoil, and spots of Linker soils.

This soil is suited to farming, but runoff is moderate and the hazard of erosion is severe. Under good management that includes contour cultivation and terraces, clean-tilled crops that leave large amounts of residue can be grown year after year in the less sloping areas. Conservation treatment should be intensified as the slope increases.

The main crops are soybeans, winter small grain, and truck crops, such as okra, strawberries, and potatoes. Other suitable crops are melons, cucumbers, green beans, and fruits, such as peaches, apples, and pears. Most of the acreage is used for pasture or meadow (fig. 10). Suitable pasture plants are bahiagrass, bermudagrass,

Figure 9.—**Strawberries in terraced field of Leadvale silt loam, 1 to 3 percent slopes.**

tall fescue, white clover, sericea lespedeza, and annual lespedeza. Capability unit IIIe-1; woodland group 4o7.

Leadvale stony silt loam, 3 to 12 percent slopes (LeD).—This soil is mainly on hillsides and benches. Areas range from 20 to 400 acres in size and follow the contour of the landscape. The profile of this soil is similar to the one described as representative for the series, but the surface layer is stony.

Included with this soil in mapping are a few rock outcrops, spots that have bedrock within 3 feet of the surface, and spots of Linker, Mountainburg, and Enders soils.

This soil is not suited to cultivated crops because of stones and rock outcrops. It is suited to pasture or range, woodland, or wildlife, and most of the acreage is used for those purposes. Suitable pasture plants are bahiagrass, bermudagrass, tall fescue, white clover, sericea lespedeza, and annual lespedeza. Capability unit VIs-2; woodland group 4x8.

Linker Series

The Linker series consists of well-drained, gently sloping to steep soils on uplands. These soils are on hilltops, benches, and hillsides. They formed in loamy material weathered from sandstone.

In a representative profile the surface layer is dark grayish-brown fine sandy loam about 2 inches thick. The subsurface layer, about 5 inches thick, is yellowish-brown fine sandy loam. The subsoil extends to a depth of about 41 inches. The upper 5 inches is strong-brown loam. The next 15 inches is yellowish-red loam. The lower part is yellowish-red flaggy fine sandy loam. Below this is sandstone bedrock.

Linker soils are low in natural fertility, but respond to fertilization. The surface layer is easy to till where it is not too sloping or stony, and it can be cultivated throughout a wide range of moisture content. Permeability and the available water capacity are moderate.

Figure 10.—**Meadow in foreground is on Leadvale silt loam, 3 to 8 percent slopes. Pines in background are on an included more strongly sloping soil.**

In some areas where erosion control is installed, these soils are suitable for cultivation. Most of the acreage is too steep and stony for cultivation and is used for pasture, range, woodland, and wildlife.

Representative profile of Linker fine sandy loam, 3 to 8 percent slopes, in a moist wooded area, NW¼NW¼ NW¼ sec. 5, T. 10 N., R. 5 W.

A1—0 to 2 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, medium, subangular blocky structure; very friable; common fine roots; medium acid; abrupt, wavy boundary.

A2—2 to 7 inches, yellowish-brown (10YR 5/4) fine sandy loam; weak, medium, subangular blocky structure; very friable; common, fine and medium roots; few pores; few standstone fragments; strongly acid; clear, wavy boundary.

B1—7 to 12 inches; strong-brown (7.5YR 5/6) loam; weak, medium, subangular blocky structure; friable; common, fine and medium roots; few pores; few sandstone fragments; strongly acid; clear, wavy boundary.

B21t—12 to 27 inches, yellowish-red (5YR 4/8) loam; moderate, medium, subangular blocky structure; friable; patchy clay films on ped faces; some sand grains bridged with clay; common, fine and medium roots; few pores; about 5 percent, by volume, is sandstone fragments; strongly acid; clear, wavy boundary.

B22t—27 to 32 inches, yellowish-red (5YR 4/8) flaggy fine sandy loam; few, medium, faint, strong-brown (7.5YR 5/8) mottles; moderate, medium, subangular blocky structure; friable; patchy clay films on ped faces and on flagstones; few medium roots; common pores; about 20 percent, by volume, is flagstones; strongly acid; clear, wavy boundary.

B3—32 to 41 inches, yellowish-red (5YR 4/8) flaggy fine sandy loam; few, medium, faint, strong-brown (7.5YR 5/8) mottles; weak, medium, subangular blocky structure; friable; few medium roots; few pores; about 15 percent, by volume, is flagstones; strongly acid; abrupt, irregular boundary.

R—41 inches, sandstone bedrock.

The A1 horizon is dark grayish brown or very dark grayish brown. The A2 horizon is brown or yellowish brown. In cultivated areas the Ap horizon is strong brown to dark yellowish brown. In some areas the A horizon is stony. The B1 horizon is strong brown or yellowish red; in some profiles no B1 horizon has formed. The B2 horizon is clay loam to fine sandy loam. In some areas the B horizon is stony. Depth to bedrock ranges from about 2 to 4 feet. The A horizon is medium acid or strongly acid, and the B horizon is strongly acid or very strongly acid.

Linker soils are associated with Enders, Hector, Leadvale, and Mountainburg soils. They are sandier and less clayey in the B horizon than Enders soils. They are deeper over bedrock than Hector and Mountainburg soils. They are

sandier and less silty in the A and Bt horizons than Leadvale soils and lack the fragipan typical of Leadvale soils.

Linker fine sandy loam, 3 to 8 percent slopes (LfC).—This soil has the profile described as representative of the series. It is on hilltops and benches. Areas range from 10 to 100 acres in size.

Included with this soil in mapping are a few small areas where slopes are as much as 12 percent, a few small stony areas, and spots of Leadvale and Mountainburg soils.

This Linker soil is suited to farming. Runoff is moderate, and the hazard of erosion is severe. Under good management that includes contour cultivation and terraces, clean-tilled crops that leave large amounts of residue can be grown year after year in the less sloping areas. Conservation treatment should be intensified as the slope increases.

The main crops are soybeans, corn, winter small grain, and truck crops, such as strawberries, okra, and potatoes. Other suitable crops are melons, cucumbers, tomatoes, green beans, and fruits, such as peaches, apples, and pears. Most of the acreage is pasture. Suitable pasture plants are bahiagrass, bermudagrass, tall fescue, white clover, sericea lespedeza, and annual lespedeza. Capability unit IIIe-1; woodland group 4o1.

Linker-Hector complex, 12 to 40 percent slopes (LhF).—This mapping unit is about 55 percent Linker soils, 20 percent Mountainburg soils, 15 percent Hector soils (fig. 11), and 10 percent rock outcrop and spots of Enders and Leadvale soils. It is on hillsides. Hector and Mountainburg soils are near the rims of broad hilltops and on benches above rock outcrops. Linker soils are in irregular areas between benches. Areas range from 20 to 600 acres in size, are irregular, and follow the contour of the landscape. The Linker and Mountainburg soils have profiles similar to the ones described as representative of their respective series, but the Linker soils have a stony surface. The Hector soil has the profile described as representative for its series.

The soils of this complex are not suited to tilled crops and are poorly suited to improved pasture. The slope, surface stones, and rock outcrop severely restrict the use of equipment; Hector and Mountainburg soils are droughty. The soils are suited to native grass pasture, wildlife, and woodland. Most of the acreage is wooded with trees of poor quality. Capability unit VIIs-2; woodland group 4x2.

McCrory Series

The McCrory series consists of poorly drained, level soils on broad upland flats and lower parts of natural levees. These soils formed in beds of loamy alluvial sediments.

Figure 11.—Sandstone bedrock about 14 inches from the surface of Hector stony fine sandy loam in an area of Linker-Hector complex, 12 to 40 percent slopes.

In a representative profile the surface layer is dark grayish-brown fine sandy loam about 7 inches thick. The subsurface layer, about 9 inches thick, is grayish-brown, mottled fine sandy loam. The subsoil is grayish-brown, mottled fine sandy loam. It extends to a depth of about 62 inches. The underlying material is grayish-brown, mottled loamy fine sand.

McCrory soils are moderate in natural fertility and respond well to fertilization. They have a high concentration of sodium and magnesium below a depth of about 22 inches. They are easy to till and can be cultivated throughout a fairly wide range of moisture content. If drained and well managed, these soils are suited to most local crops. Permeability is moderately slow, and available water capacity is moderate.

The McCrory soils in Jackson County are mapped only with Foley and Calhoun soils.

Representative profile of McCrory fine sandy loam, in a moist cultivated area of Foley-Calhoun-McCrory complex, SW¼NE¼SE¼ sec. 36, T. 13 N., R. 3 W.

Ap—0 to 7 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, medium, granular structure; very friable; common, fine and medium roots; few, fine, dark concretions; strongly acid; abrupt, smooth boundary.

A2g—7 to 16 inches, grayish-brown (10YR 5/2) fine sandy loam; few, medium, faint, dark-brown (10YR 4/3) mottles; weak, coarse, prismatic parting to weak, medium, subangular blocky structure; friable; common fine roots; few, fine, dark concretions; strongly acid; clear, wavy boundary.

B21tg—16 to 22 inches, grayish-brown (10YR 5/2) fine sandy loam; common, fine and medium, distinct, yellowish-brown (10YR 5/6) and faint, dark-brown (10YR 4/3) mottles; weak, medium, subangular blocky structure; firm; few patchy clay films on ped faces; common fine roots; black stains on some ped faces; few, fine, dark concretions; medium acid; clear, wavy boundary.

B22tg—22 to 33 inches, grayish-brown (10YR 5/2) fine sandy loam; common, medium, distinct, yellowish-brown (10YR 5/8) and faint, brown (10YR 4/3) mottles; massive in place, parting to moderate, medium, angular and subangular blocky structure; firm; few patchy clay films on ped faces; few fine roots; few, fine and medium, dark concretions; neutral; clear, smooth boundary.

B23tg—33 to 39 inches, grayish-brown (10YR 5/2) fine sandy loam; common, medium, faint, brown (10YR 5/3) and distinct, yellowish-brown (10YR 5/8) mottles; moderate, medium, subangular blocky structure; friable; common patchy clay films on ped faces; few fine roots; few calcium carbonate nodules; few, fine, dark concretions; few pores; moderately alkaline; clear, smooth boundary.

B31g—39 to 50 inches, grayish-brown (10YR 5/2) fine sandy loam; weak, fine, subangular blocky structure; very friable; few, fine, dark concretions; moderately alkaline; clear, smooth boundary.

B32g—50 to 62 inches, grayish-brown (10YR 5/2) fine sandy loam; few, medium, distinct, yellowish-brown (10YR 5/8) and faint, brown (10YR 4/3) mottles; weak, fine, subangular blocky structure; friable; few, fine, dark concretions; moderately alkaline; clear, smooth boundary.

IICg—62 to 72 inches, grayish-brown (10YR 5/2) loamy fine sand; common, medium, distinct, yellowish-brown (10YR 5/8) mottles; single grained; loose; few to common, fine, dark concretions; moderately alkaline.

The Ap horizon is dark grayish brown to brown. The A2 horizon is gray or grayish brown. The B horizon is gray or grayish-brown fine sandy loam to sandy clay loam. The C horizon is fine sandy loam or loamy fine sand. The A horizon is medium acid or strongly acid. The B21tg horizon is strongly acid to slightly acid, and the B22tg horizon is slightly acid to moderately alkaline. The lower horizons are moderately alkaline to neutral.

These soils have slightly less clay in the upper 20 inches of the B horizon than is defined as the range for the series, but this difference does not alter their usefulness and behavior.

McCrory soils are associated with Beulah, Calhoun, Foley, and Patterson soils. They are grayer throughout than Beulah soils. They are not so acid as Beulah and Patterson soils and have larger amounts of sodium in the B horizon. They are sandier throughout than Foley and Calhoun soils and are shallower over sodium-affected horizons than Calhoun soils.

Mountainburg Series

The Mountainburg series consists of well-drained, gently sloping to steep soils on hillsides and benches. These soils formed in loamy material weathered from sandstone.

In a representative profile the surface layer is dark yellowish-brown stony fine sandy loam about 4 inches thick. The subsoil is yellowish-red gravelly loam. It extends to a depth of 17 inches and is underlain by sandstone bedrock.

Mountainburg soils are low in natural fertility. They do not respond well to fertilization and are shallow, stony, and droughty. These soils are suitable for native pasture, woodland, or wildlife, but are generally unsuitable for cultivation or improved pasture. Stones and droughtiness, along with moderately steep to steep slopes in some areas, severely restrict the use of farm equipment. Permeability is moderately rapid, and available water capacity is low. Most of the acreage is woodland and savanna.

Representative profile of Mountainburg stony fine sandy loam, 3 to 12 percent slopes, in a moist wooded area, SW¼SW¼NW¼ sec. 35, T. 10 N., R. 5 W.

A1—0 to 4 inches, dark yellowish-brown (10YR 3/4) stony fine sandy loam; weak, medium, subangular blocky structure; friable; many fine roots; few pores; about 15 percent, by volume, is sandstone fragments; strongly acid; clear, smooth boundary.

B2t—4 to 17 inches, yellowish-red (5YR 4/8) gravelly loam; moderate, medium, subangular blocky structure; friable; clay films on ped faces; about 35 percent, by volume, is sandstone fragments; common fine roots; few pores; very strongly acid; abrupt, wavy boundary.

R—17 inches, sandstone bedrock.

The A1 or Ap horizon is dark grayish brown to dark yellowish brown. The B2t horizon is yellowish red or strong brown. The B2t horizon is stony or gravelly clay loam to fine sandy loam. The depth to bedrock is 12 to 20 inches. The A horizon is medium acid or strongly acid, and the B horizon is strongly acid or very strongly acid.

Mountainburg soils are associated with Enders, Hector, Leadvale, and Linker soils. They are shallower over bedrock than Enders, Leadvale, and Linker soils and are less clayey in the Bt horizon than Enders soils. They do not have a fragipan, which is typical of Leadvale soils. In contrast with Hector soils, they have a B horizon of accumulated clay.

Mountainburg stony fine sandy loam, 3 to 12 percent slopes (MoD).—Areas of this soil are 20 to more than 600 acres in size. Included in mapping are areas of rock outcrop and a few spots of Leadvale, Hector, and Enders soils.

This Mountainburg soil is droughty. It is generally not suited to cultivated crops and is poorly suited to

improved pasture. It is better suited to native pasture and wildlife. Surface stones and rock outcrops limit the use of farm equipment. Most of the acreage is wooded with trees of poor quality (fig. 12). Capability unit VIs-3; woodland group 5d2.

Patterson Series

The Patterson series consists of somewhat poorly drained, level soils in depressions on natural levees. These soils formed in beds of loamy sediments.

In a representative profile the surface layer is dark grayish-brown fine sandy loam about 5 inches thick. The subsurface layer, about 6 inches thick, is grayish-brown fine sandy loam. The subsoil extends to a depth of 72 inches or more. The upper 51 inches is gray, mottled fine sandy loam. The lower part is grayish-brown, mottled fine sandy loam.

Patterson soils are moderate in natural fertility and respond well to fertilization. The surface layer is easy to till and can be cultivated throughout a wide range of moisture content. Wetness commonly delays seedbed preparation and planting in spring. These soils are suited to most local crops. Permeability is moderately rapid, and available water capacity is moderate to low. About 75 percent of the acreage is cultivated. The rest is mainly pasture and woodland.

Representative profile of Patterson fine sandy loam, in a moist cultivated field, NW¼NW¼NW¼ sec. 14, T. 13 N., R. 2 W.

Ap—0 to 5 inches, dark grayish-brown (10YR 4/2) fine sandy loam; weak, fine, granular structure; very friable; many fine roots; common, medium, dark concretions; strongly acid; clear, smooth boundary.

A2—5 to 11 inches, grayish-brown (10YR 5/2) fine sandy loam; common, medium, faint, light brownish-gray (10YR 6/2) mottles; weak, fine, granular structure; very friable; many fine roots; common, medium and fine, dark concretions; very strongly acid; clear, smooth boundary.

B1g—11 to 21 inches, gray (10YR 6/1) fine sandy loam; common, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; weak, fine and medium, subangular blocky structure; very friable; common fine roots; common, fine and medium, dark concretions; strongly acid; clear, wavy boundary.

B21tg—21 to 41 inches, gray (10YR 5/1) fine sandy loam; common, medium and fine, distinct, yellowish-brown (10YR 5/6) and brown (10YR 5/3) mottles; weak, medium, subangular blocky structure; friable; few patchy clay films in root channels and in pores; few fine roots; few pores; common, medium and large, dark concretions; strongly acid; gradual, wavy boundary.

B22tg—41 to 62 inches, gray (10YR 6/1) fine sandy loam; weak, fine, subangular blocky structure; very friable; few patchy clay films in pores; few fine roots; few pores; few, medium and large, dark concretions; strongly acid; gradual, smooth boundary.

Figure 12.—Typical native vegetation on Mountainburg stony fine sandy loam, 3 to 12 percent slopes.

B23tg—62 to 72 inches, grayish-brown (10YR 5/2) fine sandy loam; few, medium, distinct, yellowish-brown (10YR 5/6) mottles; moderate, medium, subangular blocky structure; firm; few patchy clay films on ped faces and in pores; few fine roots; few pores; few, medium, dark concretions; very strongly acid.

The Ap horizon is grayish brown to very dark grayish brown. The A2 horizon is light brownish gray to gray. The B1g and B2g horizons are gray or light gray to light brownish gray or grayish brown. Some profiles have a C horizon of light-gray or gray fine sandy loam or loamy fine sand beginning at a depth of 36 inches or more. The A horizon is medium acid to very strongly acid, and the B horizon is strongly acid or very strongly acid.

The Patterson soils in this county typically have colors of chroma 1 rather than chroma 2 in the B horizon and are outside the defined range for the series. This difference does not alter the usefulness and behavior of the soils.

Patterson soils are associated chiefly with Beulah and Bosket soils. They are grayer throughout than the associated soils. In contrast with Beulah soils, they have a horizon of clay accumulation. They are less clayey in the Bt horizon than Bosket soils.

Patterson fine sandy loam (Pa).—This soil is in depressions on natural levees. Slopes are less than 1 percent. Included in mapping are a few small sandy knolls, small spots of swamp, and spots of Beulah and Bosket soils.

This Patterson soil is well suited to farming, but excess water is a moderate limitation. Fieldwork is delayed in spring and after heavy rain unless surface drains are provided. Under good management that includes adequate drainage, clean-tilled crops that leave large amounts of residue can be safely grown year after year.

The main crop is soybeans. Other suitable crops are corn, cotton, and grain sorghum. Winter small grain can be grown where surface drainage is adequate. Suitable pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw-1; woodland group 2w5.

Sequatchie Series

The Sequatchie series consists of well-drained, level soils on flood plains of upland drainageways. These soils formed in loamy sediments.

In a representative profile the surface layer is dark-brown loam about 10 inches thick. The subsoil extends to a depth of about 38 inches. The upper 20 inches is dark yellowish-brown loam. The lower part is dark yellowish-brown fine sandy loam. The underlying material is dark yellowish-brown fine sandy loam.

Sequatchie soils are moderate in natural fertility and respond well to fertilization. They are easy to till and can be cultivated throughout a wide range of moisture content. Permeability is moderately rapid, and available water capacity is moderate. Most tracts are frequently flooded. Most of the acreage has been cleared and is used for forage crops.

Representative profile of Sequatchie loam, in a moist cultivated area, NW¼SW¼NW¼ sec. 33, T. 10 N., R. 5 W.

Ap—0 to 5 inches, dark-brown (10YR 3/3) loam; weak, medium, granular structure; very friable; few fine roots; few dark concretions; medium acid; abrupt, smooth boundary.

A1—5 to 10 inches, dark-brown (7.5YR 3/3) loam; weak, medium, subangular blocky structure; very friable; few fine roo·; few pores; few dark concretions; strongly acid; gradual, smooth boundary.

B2t—10 to 30 inches, dark yellowish-brown (10YR 4/4) loam; few, fine, faint, yellowish-brown mottles; moderate, medium, subangular blocky structure; friable; patchy clay films on ped faces and in pores; few fine roots; few pores; strongly acid; gradual, wavy boundary.

B3—30 to 38 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; common, coarse, faint, yellowish-brown (10YR 5/4) mottles; moderate, medium, subangular blocky structure; friable; few fine roots; common pores; few dark concretions; strongly acid; gradual, wavy boundary.

C—38 to 72 inches, dark yellowish-brown (10YR 4/4) fine sandy loam; massive; very friable; few dark concretions; strongly acid.

The B horizon is dark yellowish-brown to yellowish-red fine sandy loam or loam. The C horizon is dark-brown to yellowish-brown fine sandy loam or loamy sand. The profile is medium acid or strongly acid throughout.

Sequatchie soils are associated with Hector, Leadvale, Linker, and Mountainburg soils, all of which are upland soils formed chiefly in material weathered in place. They have a thicker A horizon than the associated soils. They are also deeper over bedrock and do not have the coarse fragments typical of those soils. They are sandier in the Bt horizon than Linker soils and more sandy throughout the profile than Leadvale soils. They do not have a fragipan, which is typical of Leadvale soils.

Sequatchie loam (Se).—This soil is on the flood plains of small streams. Areas are long and narrow and range from 10 to 200 acres in size. Slopes are less than 1 percent.

Included with this soil in mapping are gravel and sandbars along streams and small areas where slopes are 1 to 3 percent.

This Sequatchie soil is not suited to cultivated crops because frequent flooding is a hazard during the growing season. If the soil is protected from flooding, clean-tilled crops that leave large amounts of residue can be grown year after year. This soil is suited to pasture or woodland. Most tracts are used for pasture and hay. A small part of the acreage is used for late-planted soybeans and corn. Suitable pasture plants are bermudagrass, tall fescue, and white clover. Capability unit Vw-1; woodland group 2o7.

Sharkey Series

The Sharkey series consists of poorly drained, level soils on flood plains of rivers. These soils formed in beds of predominantly clayey sediments deposited in back swamps (fig. 13).

In a representative profile the surface layer is dark grayish-brown silty clay loam about 3 inches thick. The subsoil is gray, mottled clay and extends to a depth of about 40 inches. The underlying material is gray, mottled silty clay.

Sharkey soils are high in natural fertility and respond well to fertilization. The surface layer forms clods if plowed when too wet, and it is somewhat difficult to till. These soils shrink and crack when they dry. When wet they expand and the cracks seal (fig. 14). In most areas they are subject to occasional flooding in winter or spring. If adequately drained, they are suited to most local crops. Permeability is very slow, and the available water capacity is high. Most of the acreage is cultivated.

Representative profile of Sharkey silty clay loam, in

Figure 13.—Water tupelo and baldcypress trees in a cutover area of Sharkey silty clay loam.

a moist cultivated area, SW¼SW¼NE¼ sec. 35, T. 10 N., R. 3 W.

Ap—0 to 3 inches, dark grayish-brown (10YR 4/2) silty clay loam; weak, fine, subangular blocky structure; friable; common fine roots; few dark concretions; neutral; clear, smooth boundary.

B2g—3 to 40 inches, gray (10YR 5/1) clay; common, fine and medium, distinct, yellowish-brown (10YR 5/6) mottles; weak, medium, subangular blocky structure; firm; few fine roots; few pores; few dark concretions; pressure faces on peds; neutral; gradual, smooth boundary.

Cg—40 to 72 inches, gray (10YR 5/1) silty clay; common, fine and medium, distinct, yellowish-brown (10YR 5/6) and dark yellowish-brown (10YR 4/4) mottles; weak, medium, subangular blocky structure; firm; few slickensides; neutral.

The Ap horizon is dark gray to very dark grayish brown. The B horizon is gray or dark gray. The C horizon is clay or silty clay. In some places a IIC horizon of gray or light brownish-gray silt loam to fine sandy loam lies below a depth of 48 inches. The profile is slightly acid to mildly alkaline throughout.

Sharkey soils are associated with Egam, Forestdale, and Staser soils. They are more clayey than the associated soils. Sharkey soils are grayer than Egam and Staser soils. They are less acid than Forestdale soils and do not have the B horizon of accumulated clay.

Sharkey silty clay loam (Sh).—This soil is in depressions and on flats between sloughs and abandoned river channels on bottom lands. Areas range from 20 acres to more than 600 acres in size. Slopes are less than 1 percent.

Included with this soil in mapping are spots of Egam, Forestdale, and Staser soils.

This Sharkey soil is suited to farming, but excess water is a severe limitation. Most areas are flooded occasionally, but floods rarely occur between June and January. Fieldwork is delayed several days after a rain unless surface drains are installed. Under good management that includes adequate drainage, clean-tilled, warm-season crops that leave large amounts of residue can be grown year after year.

The main crops are soybeans and rice. Other suitable crops are grain sorghum and cotton. Winter small grain can be grown where surface drainage is adequate, but the crop may be damaged by floods in some years. Suitable pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIIw-4; woodland group 2w6.

Staser Series

The Staser series consists of well-drained, level soils on low natural levees adjacent to streams. These soils formed in young, stratified loamy sediments.

In a representative profile the surface layer is dark-brown silt loam about 15 inches thick. The upper 18 inches of the underlying material is dark-brown silt loam stratified with thin lenses of fine sandy loam. The next 14 inches is dark-brown loam stratified with thin lenses of fine sandy loam. The lower 25 inches is yellowish-brown fine sand.

Staser soils are high in natural fertility. They respond well to fertilization and are easy to till. In most places they are subject to occasional flooding, but are suited to most local crops. Permeability is moderate, and available water capacity is high. Most of the acreage is cultivated. A few small low-lying areas are wooded.

Representative profile of Staser silt loam, in a moist cultivated field, NW¼NW¼SE¼ sec. 9, 11 N., R. 3 W.

Ap—0 to 7 inches, dark-brown (10YR 3/3) silt loam; weak, fine, granular structure; very friable; common fine roots; few pores; neutral; abrupt, smooth boundary.

A1—7 to 15 inches, dark-brown (10YR 3/3) silt loam; moderate, medium, subangular blocky structure; friable; few fine roots; few pores; common worm holes and casts; few bands of fine sand; neutral; clear, smooth boundary.

C1—15 to 21 inches, dark-brown (10YR 3/3) silt loam and thin lenses of dark yellowish-brown (10YR 3/4) fine sandy loam; platy rock structure; many bedding planes; friable; few fine roots; common pores and worm holes; neutral; clear, smooth boundary.

C2—21 to 33 inches, dark-brown (10YR 3/3) silt loam; massive; few bedding planes and thin lenses of fine sandy loam; friable; few roots; common pores; few worm holes; few charcoal fragments; neutral; clear, wavy boundary.

C3—33 to 47 inches, dark-brown (10YR 4/3) loam stratified with dark yellowish-brown (10YR 4/4) fine sandy

Figure 14.—Surface of Sharkey silty clay loam showing cracks resulting from drying and shrinking.

loam; massive; few bedding planes; few pores; common worm holes; neutral; gradual, wavy boundary.

C4—47 to 72 inches, yellowish-brown (10YR 5/4) fine sand; common, coarse, faint, dark-brown (10YR 3/3) mottles; massive; very friable; neutral.

The A horizon is dark brown or very dark grayish brown. The C1 horizon is silt loam or loam. Other subhorizons of the C horizon are dark-brown to yellowish-brown stratified or laminated layers of silt loam to fine sand. The profile is slightly acid or neutral throughout.

Staser soils are associated with Egam and Sharkey soils. They are stratified throughout and lack the B horizon typical of Egam and Sharkey soils. They are less clayey than Egam and Sharkey soils.

Staser silt loam (St).—This soil is chiefly in long, narrow strips along streams. Areas range from 10 to 200 acres in size. Slopes are less than 2 percent.

Included with this soil in mapping are a few undulating areas, spots of sand, and spots of Egam and Sharkey soils.

This Staser soil is suited to farming. Most areas are flooded occasionally, but floods rarely occur between June and January. Under good management, clean-tilled, warm-season crops that leave large amounts of residue can be grown year after year.

The main crops are soybeans and cotton. Other suitable crops are corn, grain sorghum, and truck crops, such as okra, sweet corn, potatoes, tomatoes, green beans, and melons. Winter small grain can be grown, but the crop may be damaged by floods in some years. Suitable pasture plants are bermudagrass, tall fescue, and white clover. Capability unit IIw–2; woodland group 2o4.

Use and Management of the Soils

This section gives facts about capability grouping of soils used for crops and pasture and about predicted average acre yields of principal crops grown in the county. It also describes use of the soils for wildlife, woodland, engineering, and town and country planning.

Use of the Soils for Crops and Pasture

In the following pages, the system of capability grouping used by the Soil Conservation Service is explained. A table is provided to show predicted average yields per acre of the principal crops grown in the county. Those who wish to know the capability classification of a given soil can refer to the "Guide to Mapping Units" at the back of this soil survey. Detailed information about soil management is given in the section "Descriptions of the Soils."

Capability grouping

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations when used for field crops, the risk of damage when they are so used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for range, for forest trees, or for engineering.

In the capability system, all kinds of soil are grouped at three levels: the capability class, the subclass, and the unit. These levels are described in the following paragraphs.

CAPABILITY CLASSES, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use.

CAPABILITY SUBCLASSES are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States and not in Jackson County, shows that the chief limitation is climate that is too cold or too dry.

In class I there are no subclasses, because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c* because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture, range, woodland, wildlife, or recreation.

CAPABILITY UNITS are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-2 or IIIw-4. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraph; and the Arabic numeral specifically identifies the capability unit within each subclass.

Farmers and others may find it practical to use and manage alike some of the different kinds of soil. These readers can make good use of the capability grouping. Following is a descriptive outline of capability classes and units recognized in Jackson County. The placement of any mapping unit in the grouping can be learned by turning to the "Guide to Mapping Units" at the back of the publication, or by referring to the notation at the end of the description of each mapping unit in the section "Descriptions of the Soils."

Class I soils have few limitations that restrict their use.
- Unit I-1. Deep, level, well-drained, loamy soils.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.
- Unit IIe-1. Deep, undulating, well-drained, loamy soils.
- Unit IIe-2. Deep, nearly level, moderately well drained, loamy soils.
- Unit IIw-1. Deep, level and undulating, somewhat poorly drained, loamy soils.
- Unit IIw-2. Deep, level, moderately well drained and well drained, loamy soils subject to occasional flooding.
- Unit IIs-1. Deep, undulating, somewhat excessively drained, loamy soils.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.
- Unit IIIe-1. Deep and moderately deep, gently sloping, moderately well drained and well drained, loamy soils.
- Unit IIIw-1. Deep, level, somewhat poorly drained and poorly drained, loamy soils.
- Unit IIIw-2. Deep, level, somewhat poorly drained and poorly drained, loamy soils that predominantly have a clayey subsoil; some have a high content of sodium in the lower part.
- Unit IIIw-3. Deep, level, poorly drained, loamy soils that have a high content of sodium in the middle and lower parts of the subsoil.
- Unit IIIw-4. Deep, level, somewhat poorly drained and poorly drained, predominantly clayey soils.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both. (None in Jackson County.)

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife.
- Unit Vw-1. Deep, level, well-drained, loamy soils subject to frequent flooding.

Class VI soils have severe limitations that make them generally unsuitable for cultivation and limit their use largely to pasture or range, woodland, or wildlife.
- Unit VIe-1. Deep, gently sloping and moderately sloping, well-drained, loamy soils that have a clayey subsoil.
- Unit VIs-1. Deep, level, somewhat poorly drained, loamy soils that have a high content of sodium throughout the subsoil.
- Unit VIs-2. Deep, gently sloping and moderately sloping, moderately well drained, stony soils.
- Unit VIs-3. Shallow, gently sloping and moderately sloping, well-drained, stony soils.

Class VII soils have very severe limitations that make them unsuitable for cultivation and restrict their use largely to pasture or range, woodland, or wildlife.

Unit VIIs-1. Deep, moderately steep, well-drained, stony soils that have a clayey subsoil.

Unit VIIs-2. Moderately deep and shallow, moderately steep and steep, well-drained, stony soils.

Class VIII soils and landforms have limitations that preclude their use for commercial crop production and restrict their use to recreation, wildlife, or water supply, or to use for esthetic purposes. (None in Jackson County.)

Predicted yields [3]

The predicted yields of principal crops shown in table 3 are based mainly on data supplied by farmers and other agricultural workers in Jackson County. These yields are not the highest that can be obtained, but they are generally obtained by (a) using the proper equipment at the right time to prepare the soil, plant and harvest crops, and control weeds; (b) following a systematic program for controlling insects and plant diseases; (c) choosing crop varieties that are well suited to the soil and the type of farming operation; (d) fertilizing according to soil tests; (e) draining wet soils; and (f) supplementing irrigation in dry seasons.

[3] W. WILSON FERGUSON, conservation agonomist, Soil Conservation Service, helped prepare this section.

Use of the Soils for Wildlife [4]

Wildlife and fish respond to basic characteristics of the soils. This response is affected by fertility, slope, restrictive layers, structure, wetness, erosion, and other factors. The kind of wildlife habitat depends on the vegetation, the food it produces, and the water supply. The kind and amount of vegetation are closely related to soil characteristics and present land use. The water-holding characteristics of soils determine whether they are suitable for ponds and reservoirs. The fertility of impounded water is directly related to the fertility of the soil.

Wildlife habitat can be managed by growing choice food plants, managing existing vegetation, and developing water resources where water is scarce. Information about the soils is useful for these purposes and provides a basis for planning multiple-use management. Present vegetation reflects past land use and may be a false criterion in judging the land's potential for development.

Table 4 rates the soils of Jackson County according to their relative suitability for the establishment, improvement, or maintenance of eight elements of wildlife habitat and three classes of wildlife. These ratings do not

[4] ROY A. GRIZZEL, JR., biologist, Soil Conservation Service, helped to prepare this section.

TABLE 3.—*Predicted average yields per acre of principal crops grown under improved management*

[Absence of a figure indicates that the crop is not suited to or is not commonly grown on the soil]

Soil	Corn	Cotton	Rice	Soybeans	Wheat	Grain sorghum	Common bermudagrass	Tall fescue
	Bu.	*Lb. of lint*	*Bu.*	*Bu.*	*Bu.*	*Cwt.*[1]	*A.U.M.*[1]	*A.U.M.*[1]
Amagon and Forestdale silt loams	--------	625	120	35	45	50	7.5	9.0
Beulah fine sandy loam, undulating	65	500	--------	35	40	45	8.0	7.0
Bosket fine sandy loam, 0 to 1 percent slopes	85	775	--------	40	50	60	10.0	9.0
Bosket fine sandy loam, undulating	85	725	--------	35	50	60	10.0	9.0
Crowley silt loam	--------	550	130	30	45	50	7.0	7.0
Crowley and Hillemann silt loams	--------	550	130	30	45	50	7.0	7.0
Dexter silt loam, 0 to 1 percent slopes	85	775	--------	40	50	60	8.0	9.0
Dexter silt loam, undulating	85	750	--------	40	50	60	8.0	9.0
Dundee silt loam, 0 to 1 percent slopes	85	750	120	35	40	60	8.0	9.0
Dundee silt loam, undulating	85	725	--------	35	35	60	8.0	9.0
Egam silt loam	90	750	--------	40	50	60	8.0	9.0
Enders silt loam, 3 to 12 percent slopes	--------	--------	--------	--------	25	--------	6.0	5.0
Enders stony silt loam, 12 to 25 percent slopes	--------	--------	--------	--------	--------	--------	4.0	--------
Foley-Calhoun complex	--------	600	120	25	40	45	6.0	7.0
Foley-Calhoun-McCrory complex	--------	600	120	30	40	45	6.0	7.0
Forestdale silty clay loam	--------	600	130	35	40	50	7.0	9.0
Grubbs silt loam	--------	550	120	30	40	50	7.0	8.0
Jackport silty clay loam	--------	500	130	30	40	50	7.0	8.0
Lafe silt loam	--------	--------	30	10	--------	--------	3.0	--------
Leadvale silt loam, 1 to 3 percent slopes	60	500	--------	25	30	40	7.0	5.0
Leadvale silt loam, 3 to 8 percent slopes	55	450	--------	20	25	35	6.0	5.0
Leadvale stony silt loam, 3 to 12 percent slopes	--------	--------	--------	--------	--------	--------	5.0	4.0
Linker fine sandy loam, 3 to 8 percent slopes	45	450	--------	20	25	35	6.0	5.0
Mountainburg stony fine sandy loam, 3 to 12 percent slopes	--------	--------	--------	--------	--------	--------	5.0	--------
Patterson fine sandy loam	50	550	--------	30	30	45	7.0	7.0
Sequatchie loam	--------	--------	--------	--------	--------	--------	8.0	8.0
Sharkey silty clay loam	--------	600	130	35	--------	50	7.0	8.0
Staser silt loam	90	750	--------	40	50	60	8.0	9.0

[1] Animal-unit-months. Values represent the number of months 1 acre will provide grazing for one animal unit (1,000 pounds live weight) without damage to pasture. One animal unit equals one cow, one steer, one horse or mule, five hogs, or seven sheep.

take into account the present use of the soil, or the distribution of wildlife and human population. The suitability of individual sites must be determined by onsite inspection.

A rating of *well suited* means that habitat generally is easily created, improved, or maintained; the soil has few or no limitations that affect management; satisfactory results can be expected.

Suited means that habitat can be created, improved, or maintained in most places; the soil has moderate limitations that affect management; moderate intensity of management may be required for satisfactory results.

Poorly suited means that habitat can be created, improved, or maintained in most places; the soil has severe limitations; habitat management is difficult and expensive; results are not always satisfactory.

Unsuited means that it is impractical or impossible to create or maintain habitat; unsatisfactory results are probable.

The column heading *Grain and seed crops* refers to annual crops, such as wheat, corn, sorghums, oats, cowpeas, and soybeans.

Grasses and legumes refers to domestic grasses and legumes, such as bermudagrass, tall fescue, bahiagrass, ryegrass, clover, annual lespedeza, and bush lespedeza.

Wild herbaceous plants refers to native or introduced perennials, such as tickclover, perennial lespedeza, wild bean, pokeberry, panicgrass, croton (goatweed), and partridgepea.

Hardwood woody plants are nonconiferous trees, shrubs, and vines that produce fruit, nuts, buds, catkins, or foliage that wildlife use extensively for food. Examples are oak, cherry, mulberry, dogwood, viburnum, maple, blueberry, honeysuckle, hickory, greenbrier, rose, and wild grape.

Low-growing coniferous woody plants are cone-bearing trees and shrubs used mainly as cover, but may furnish food in the form of browse, seed, or fruitlike cones. They may be established naturally, or by planting. Included are pine, juniper, cedar, and ornamental plants. The best soils are those that produce low-growing plants with low branches. Thus, good sites for commercially growing pine or hardwood are poorly suited to low-growing coniferous woody plants.

Wetland food and cover plants are such plants as smartweed, wild millet, spikerush, sedge, cattail, and rice cutgrass.

Shallow water developments are impoundments, excavations, or other water control structures that generally do not exceed a depth of 6 feet. They create a habitat that is principally for waterfowl. They may be designed to be drained and planted to crops, or they may be permanent impoundments.

Ponds and reservoirs are areas suited to impounded, leveed, or dugout water developments of suitable depth, quantity, and quality to produce fish and wildlife.

The three kinds of wildlife listed in table 4 are defined as follows:

Openland wildlife are quail, dove, cottontail rabbit, fox, meadowlark, field sparrow, and other mammals and birds that normally live on cropland, pasture, meadow, lawn, and in other openland areas where grass, herbs, and shrubby plants grow.

Woodland wildlife are woodcock, thrush, vireo, deer, turkey, squirrel, raccoon, and other mammals and birds that normally live in wooded areas where trees and shrubs are dominant.

Wetland wildlife are duck, geese, rail, heron, shore birds, otter, mink, muskrat, beaver, and other mammals and birds that normally live in wet areas, marsh, and swamp.

Use of the Soils for Woodland [5]

Virgin forest once covered all of Jackson County except for scattered tracts on the southwestern uplands. These tracts were savannas of scattered hardwood and pine trees, and an understory of mainly tall grasses.

On the uplands the principal commercial trees were hickory, elm, upland oaks, shortleaf pine (fig. 15), and redcedar. In the lowlands, which make up most of the county, were sweetgum, water tupelo, baldcypress, bottom-land oaks, ash, sycamore, cottonwood, hickory, and pecan. Woodland now makes up only about 45,300 acres,

[5] MAX D. BOLAR, woodland conservationist, and IVAN R. PORTER, range conservationist, Soil Conservation Service, helped prepare this section.

Figure 15.—**A natural stand of shortleaf pine on Linker fine sandy loam, 3 to 8 percent slopes.**

TABLE 4.—*Suitability of soils for elements*

Soil series and map symbol	Elements of wildlife habitat				
	Grain and crops	Grasses and legumes	Wild herbaceous plants	Hardwood woody plants	Low-growing coniferous woody plants
Amagon: Af	Suited	Suited	Suited	Well suited	Poorly suited
Beulah: BeU	Suited	Suited	Suited	Well suited	Poorly suited
Bosket: BoA, BoU	Well suited	Well suited	Well suited	Well suited	Poorly suited
Crowley: Co	Suited	Suited	Suited	Well suited	Poorly suited
Cr	Suited	Suited	Suited	Well suited	Poorly suited
Dexter: De, DeU	Well suited	Well suited	Well suited	Well suited	Poorly suited
Dundee: DvA, DvU	Well suited	Well suited	Well suited	Well suited	Poorly suited
Egam: Eg	Suited	Well suited	Well suited	Well suited	Poorly suited
Enders: EnD	Suited	Well suited	Well suited	Well suited	Poorly suited
EsE	Poorly suited	Suited	Well suited	Well suited	Poorly suited
Foley: Fc, Fm	Suited	Suited	Suited	Well suited	Poorly suited
Forestdale: Fo	Suited	Suited	Suited	Well suited	Poorly suited
Grubbs: Gb	Suited	Suited	Well suited	Well suited	Poorly suited
Jackport: Ja	Suited	Suited	Well suited	Well suited	Poorly suited
Lafe: La	Unsuited	Poorly suited	Poorly suited	Poorly suited	Suited
Leadvale: LdB	Suited	Well suited	Well suited	Well suited	Poorly suited
LdC	Suited	Well suited	Well suited	Well suited	Poorly suited
LeD	Poorly suited	Suited	Well suited	Well suited	Poorly suited
Linker: LfC	Suited	Well suited	Well suited	Well suited	Poorly suited
LhF	Poorly suited to unsuited.	Poorly suited	Suited	Suited	Poorly suited to suited.
Mountainburg: MoD	Poorly suited	Poorly suited	Suited	Suited	Suited
Patterson: Pa	Well suited	Well suited	Well suited	Well suited	Poorly suited
Sequatchie: Se	Poorly suited	Suited	Suited	Well suited	Poorly suited
Sharkey: Sh	Suited	Suited	Suited	Well suited	Poorly suited
Staser: St	Suited	Well suited	Well suited	Well suited	Poorly suited

or 11 percent of the county. All the woodland is privately owned.

A suitable secondary use for many areas of woodland is grazing. The grass, legumes, forbs, and many woody plants in the woodland understory can be utilized for forage. In tracts used chiefly for the production of trees, grazing must be controlled so that desirable seedlings are not damaged and forage plants are not overgrazed.

This section gives information about both the production of wood crops and the production of forage in woodland and savannas.

Production of wood crops

Table 5 gives information that will help owners and operators of woodland to establish, manage, and harvest tree crops. The information is based on detailed plot studies, measurements of different trees on different soils, published and unpublished records, and the experience and judgment of technicians who work with tree crops in this area.

Woodland management can be planned more effectively if soils are grouped according to characteristics that affect tree growth and stand management. The soils in Jackson County have been assigned to 13 woodland suitability groups. These groups are listed in table 5. To find the woodland group to which a specific soil has been assigned, refer to the "Guide to Mapping Units" at the back of the survey, or to the notation at the end of the mapping unit description. Each group consists of soils that are about the same in suitability for timber, potential productivity, and management requirements. These factors depend on soil characteristics, such as depth; arrangement of layers in the profile; texture, drainage, reaction, and consistence of each layer; content of humus and minerals; degree of erosion; and slope.

Each group has been assigned a symbol consisting of three elements. The first element in the symbol is an Arabic numeral. It indicates the relative potential of the soils in the group for wood crops. It expresses the site quality based on one or more forest types or species. The numeral 1 indicates a very high site index or potential productivity; numerals 2, 3, 4, and 5 indicate progressively lower potential productivities.

The second element in the symbol, a lowercase letter, indicates a characteristic that is the primary cause of the limitation. The letter "x" indicates a stony or rocky soil; "w" indicates wetness; "t" indicates toxic substances within the rooting zone; "d" indicates a restricted rooting depth; and "o" indicates that the soil has no significant limitation.

The third element, an Arabic numeral, indicates the degree of limitation and the suitability of the soils for trees. The numeral 1 indicates that the soil has few or no limitations and is best suited to needleleaf trees; 2

of wildlife habitat and kinds of wildlife

Elements of wildlife habitat—Continued			Kinds of wildlife		
Wetland food and cover plants	Shallow water developments	Ponds and reservoirs	Openland	Woodland	Wetland
Well suited	Well suited	Well suited	Suited	Well suited	Well suited.
Unsuited	Unsuited	Unsuited	Suited	Well suited	Unsuited.
Unsuited	Unsuited	Poorly suited	Well suited	Well suited	Unsuited.
Well suited	Well suited	Well suited	Suited	Well suited	Well suited.
Well suited to suited	Well suited	Well suited	Suited	Well suited	Well suited.
Unsuited	Unsuited	Suited	Well suited	Well suited	Unsuited.
Suited	Suited	Suited	Well suited	Well suited	Suited.
Poorly suited	Poorly suited	Suited to poorly suited.	Well suited	Well suited	Poorly suited.
Unsuited	Unsuited	Well suited	Well suited	Well suited	Unsuited.
Unsuited	Unsuited	Suited	Suited	Well suited	Unsuited.
Well suited	Well suited	Well suited	Suited	Well suited	Well suited.
Well suited	Well suited	Well suited	Suited	Well suited	Well suited.
Suited	Well suited	Well suited	Suited	Well suited	Suited.
Suited	Suited	Well suited	Suited	Well suited	Suited.
Poorly suited	Suited	Suited	Poorly suited	Poorly suited	Suited.
Poorly suited	Poorly suited	Well suited to suited.	Well suited	Well suited	Poorly suited.
Unsuited	Unsuited	Well suited to suited.	Well suited	Well suited	Unsuited.
Unsuited	Unsuited	Suited	Suited	Well suited	Unsuited.
Unsuited	Unsuited	Suited to poorly suited.	Well suited	Well suited	Unsuited.
Unsuited	Unsuited	Poorly suited to unsuited.	Poorly suited	Suited	Unsuited.
Unsuited	Unsuited	Unsuited	Poorly suited	Suited	Unsuited.
Well suited	Suited to poorly suited.	Suited to poorly suited.	Well suited	Well suited	Suited.
Unsuited	Unsuited	Poorly suited to unsuited.	Suited	Well suited	Unsuited.
Well suited	Well suited	Well suited	Suited	Well suited	Well suited.
Unsuited	Unsuited	Poorly suited	Well suited	Well suited	Unsuited.

indicates that the soil has one or more moderate limitations and is best suited to needleleaf trees; and 3 indicates that the soil has one or more severe limitations and is best suited to needleleaf trees. The numeral 4 indicates that the soil has few or no limitations and is best suited to broadleaf trees; 5 indicates that the soil has one or more moderate limitations and is best suited to broadleaf trees; and 6 indicates that the soil has one or more severe limitations and is best suited to broadleaf trees. The numeral 7 indicates that the soil has few or no limitations and is suited to both broadleaf and needleleaf trees; 8 indicates that the soil has one or more moderate limitations and is suited to both broadleaf and needleleaf trees; and 9 indicates that the soil has one or more severe limitations and is suited to both broadleaf and needleleaf trees. Zero indicates that the soil is not suited to the production of major commercial wood products.

Under the heading *Woodland groups* in table 5 are the suitability group symbol, the map symbols, and a brief description of the soils.

Under the heading *Major hazards and limitations* are the nature and degree of soil-related limitations to be considered in management.

Equipment limitation refers to soil characteristics and topographic features that restrict or prohibit the use of conventional equipment for planting, road construction, controlling unwanted vegetation, harvesting tree crops, and stopping fires. The limitations in Jackson County are caused by wetness, texture of the surface soil, frequency and duration of flooding, and slope. The limitation is *slight* if the slope is less than 20 percent, if the soils are loamy and at least moderately well drained and are not subject to flooding or excessive surface water, and if the use of equipment is restricted for only a short period after a heavy rain. The limitation is *moderate* if the slope is predominantly 20 to 40 percent, if the soils are not subject to periodic flooding or excessive surface water for extended periods, if the soils are high in content of sand, and if equipment normally can be used from March to December. The limitation is *severe* if the use of equipment is limited to the driest months or to short periods between extended floods.

Seedling mortality refers to the expected loss of seedlings during the first two growing seasons after planting. Loss of seedlings in this county is caused mainly by either excess water or droughtiness. Mortality is *slight* if less than 25 percent of planted seedlings die and adequate natural regeneration ordinarily occurs. Mortality is *moderate* if between 25 and 50 percent of planted seedlings die, natural regeneration cannot be relied upon without site preparation, and replanting is necessary. Mortality is *severe* if more than 50 percent of the planted seedlings die, natural regeneration cannot be relied upon, and special site preparation and replanting are necessary.

TABLE 5.—*Hazards and limitations, potential productivity, preferred tree*

Description of woodland groups and map symbols	Major hazards and limitations to use and management	Potential productivity	
		Important woodland trees	Estimated site index [1]
Group 1w6. Deep, level, poorly drained, loamy soils on bottom lands; very high potential productivity; best suited to hardwoods. Af, Fo.	Severe equipment limitation and moderate to severe seedling mortality because of soil wetness.	Cottonwood Sweetgum Water oak Nuttall oak	106–115+ 96+ 96–116 86–95
Group 2o4. Deep, level and undulating, somewhat excessively drained to moderately well drained, loamy soils on bottom lands; high potential productivity; best suited to hardwoods. BeU, BoA, BoU, De, DeU, Eg, St.	None.	Cottonwood Water oak Nuttall oak Willow oak Cherrybark oak Sweetgum	96–105 86–95 86–95 86–95 86–95 86–95
Group 2w5. Deep, level and undulating, somewhat poorly drained, loamy soils on bottom lands; high potential productivity; best suited to hardwoods. DvA, DvU, Pa.	Moderate equipment limitation and slight to moderate seedling mortality because of soil wetness.	Cottonwood Water oak Cherrybark oak Nuttall oak Sweetgum	96–105 86–105 86–105 86–105 86–105
Group 2w6. Deep, level, poorly drained and somewhat poorly drained, predominantly clayey soils on bottom lands; high potential productivity; best suited to hardwoods. Ja, Sh.	Severe equipment limitation and moderate seedling mortality because of soil wetness.	Sweetgum Water oak Nuttall oak Cherrybark oak	86–95 86–95 86–95 76–85
Group 2o7. Deep, level, well-drained, loamy soils on bottom lands; high potential productivity; suitable for pines or hardwoods. Se.	None.	Shortleaf pine Sweetgum	76–85 86–95
Group 3w8. Deep, level, somewhat poorly drained, loamy soils on lowland flats; moderately high potential productivity; suitable for pines or hardwoods. Gb.	Moderate equipment limitation and seedling mortality because of soil wetness.	Water oak Willow oak Shumard oak Nuttall oak Cherrybark oak Sweetgum Cottonwood Sycamore	76–85 76–85 66–75 76–85 66–75 76–85 86–95 86–95
Group 3w9. Deep, level, poorly drained and somewhat poorly drained, loamy soils on lowland flats; some with high sodium content in the subsoil; moderately high potential productivity; suitable for pines or hardwoods. Co, Cr, Fc, Fm.	Severe equipment limitation and seedling mortality because of soil wetness.	Sweetgum Water oak Cherrybark oak	66–75 66–75 66–75
Group 4o1. Predominantly moderately deep, gently sloping to moderately sloping, well drained, loamy soils on uplands; moderate potential productivity; suitable for pines and redcedar. EnD, LfC.	None.	Shortleaf pine Redcedar	56–65 35–45
Group 4x2. Predominantly moderately deep, moderately steep and steep, well drained, stony soils on uplands; moderate potential productivity; suitable for pines and redcedar. EsE, LhF.	Moderate to severe erosion hazard and equipment limitation and moderate seedling mortality because of slope and stoniness.	Shortleaf pine Redcedar	56–65 35–45
Group 4o7. Predominantly moderately deep, nearly level to gently sloping, moderately well drained, loamy soils on uplands; moderate potential productivity; suitable for pines and redcedar on south and west slopes and for hardwoods on north and east slopes, in coves, and at the base of slopes. LdB, LdC.	None.	Shortleaf pine Redcedar	56–65 35–45

See footnote at end of table.

species, and understory forage yields by woodland groups of soils

Preferred species—		Understory vegetation utilized as forage	
In existing woodland	For planting	Principal forage plants (excellent condition)	Estimated yields of air-dry forage by tree canopy class
			Lb. per acre
Cottonwood, sweetgum, water oak, Nuttall oak, cherrybark oak, Shumard oak, green ash, silver maple, hackberry, elm, sycamore, baldcypress.	Nuttall oak, water oak, green ash, cottonwood, sycamore, cherrybark oak, Shumard oak, sweetgum.	Switchgrass, Florida paspalum, Virginia wildrye, low panicums, sedges, forbs.	Open canopy 3,500 to 7,000; sparse canopy 3,000 to 5,000; medium canopy 1,500 to 3,500; dense canopy 0 to 2,000.
Cottonwood, water oak, Nuttall oak, willow oak, cherrybark oak, sweetgum, black walnut, sycamore, hackberry, green ash, elm, Shumard oak, swamp chestnut oak, pecan.	Black walnut, cherrybark oak, water oak, Shumard oak, swamp chestnut oak, willow oak, sweetgum, cottonwood, yellow-poplar, green ash.	Virginia wildrye, big bluestem, plumegrass, switchgrass, switchcane, low panicums.	Open canopy 5,000 to 8,000; sparse canopy 3,000 to 6,000; medium canopy 1,000 to 3,500; dense canopy 400 to 2,000.
Cottonwood, water oak, cherrybark oak, Nuttall oak, sweetgum, sycamore, swamp chestnut oak, willow oak, overcup oak, green ash, hackberry, elm, pecan.	Cherrybark oak, water oak, Nuttall oak, sweetgum, cottonwood, sycamore, swamp chestnut oak, Shumard oak.	Switchgrass, Virginia wildrye, plumegrass, swamp sunflower, velvetgrass, goldenrod.	Open canopy 3,500 to 7,000; sparse canopy 2,500 to 5,000; medium canopy 1,500 to 3,500; dense canopy 0 to 2,000.
Sweetgum, water oak, Nuttall oak, cherrybark oak, green ash, cottonwood, elm, hackberry, overcup oak, willow oak, swamp chestnut oak, pecan, hackberry, sycamore.	Cherrybark oak, Nuttall oak, water oak, swamp chestnut oak, cottonwood, green ash, sycamore, sweetgum.	Virginia wildrye, switchgrass, plumegrass, eastern gamagrass, velvetgrass, swamp sunflower, goldenrod.	Open canopy 3,500 to 7,000; sparse canopy 2,500 to 5,000; medium canopy 1,500 to 3,500; dense canopy 0 to 2,000.
Shortleaf pine, cherrybark oak, sweetgum, willow oak, Shumard oak, cottonwood, sycamore.	Loblolly pine, cherrybark oak, Shumard oak, black walnut, yellow-poplar, cottonwood, sycamore, sweetgum.	Little bluestem, big bluestem, switchgrass, switchcane, Virginia wildrye, plumegrass, perennial sunflowers.	Open canopy 5,000 to 8,000; sparse canopy 3,000 to 6,000; medium canopy 1,000 to 3,500; dense canopy 400 to 1,500.
Water oak, willow oak, Shumard oak, Nuttall oak, sweetgum, cottonwood, sycamore, cherrybark oak, southern red oak.	Sweetgum, cherrybark oak, Shumard oak, water oak, cottonwood, sycamore, loblolly pine.	Plumegrass, switchgrass, little bluestem, big bluestem, Florida paspalum, Virginia wildrye, native paspalums, uniolas, sedges, rushes.	Open canopy 3,500 to 6,000; sparse canopy 2,500 to 5,000; medium canopy 1,000 to 3,000; dense canopy 400 to 1,500.
Sweetgum, water oak, cherrybark oak, Shumard oak, willow oak, southern red oak.	Shumard oak, cherrybark oak, water oak, sweetgum, loblolly pine.	Switchgrass, big bluestem, eastern gamagrass, Florida paspalum, plumegrass, beaked panicum, spike tridens, panicgrasses.	Open canopy 4,500 to 6,000; sparse canopy 3,000 to 5,000; medium canopy 1,500 to 3,500; dense canopy 500 to 1,800.
Shortleaf pine, redcedar	Loblolly pine, shortleaf pine, redcedar.	Little bluestem, big bluestem, indiangrass, Canada wildrye, low panicum, praire clover, perennial sunflowers.	Open canopy 3,000 to 5,000; sparse canopy 1,500 to 4,000; medium canopy 1,000 to 3,000; dense canopy 400 to 1,500.
Shortleaf pine, redcedar	Loblolly pine, shortleaf pine, redcedar.	Little bluestem, big bluestem, indiangrass, Canada wildrye, starved panicum, prairie clover, stiffleaf sunflower.	Open canopy 2,500 to 5,000; sparse canopy 1,500 to 3,500; medium canopy 1,000 to 2,500; dense canopy 400 to 1,500.
Shortleaf pine, redcedar, southern red oak, white oak, black walnut, black locust, black cherry.	Loblolly pine, shortleaf pine, redcedar; on north and east slopes, coves, and slope bases, black walnut, black locust, and southern red oak.	Little bluestem, big bluestem, indiangrass, Canada wildrye, low panicums, native lespedezas, perennial sunflowers.	Open canopy 3,000 to 6,000; sparse canopy 2,000 to 4,500; medium canopy 1,000 to 2,500; dense canopy 200 to 1,500.

TABLE 5.—*Hazards and limitations, potential productivity, preferred tree*

Description of woodland groups and map symbols	Major hazards and limitations to use and management	Potential productivity	
		Important woodland trees	Estimated site index [1]
Group 4x8. Predominantly moderately deep, gently sloping to moderately sloping, moderately well drained, stony soils on uplands; moderate potential productivity; suitable for pines and redcedar on south and west slopes and for hardwoods on north and east slopes, in coves, and on slope bases. LeD.	Moderate equipment limitation because of stoniness.	Shortleaf pine Recedar	56–65 35–45
Group 5d2. Shallow, gently sloping to moderately sloping, well drained, stony soils on uplands; low potential productivity; suitable for pines and redcedar. MoD.	Moderate equipment limitation because of stoniness, and moderate seedling mortality because of droughtiness.	Shortleaf pine Redcedar	–55 –35
Group 5t0. Deep, level, somewhat poorly drained, loamy soils on lowland flats; high content of sodium in the subsoil; unsuitable for trees of commercial quality. La.	---	---	---

[1] Site class ratings adapted from data gathered in soil-site studies by the Soil Conservation Service and the Forest Service (*13, 14 16, 17*).

Erosion hazard refers to the risk of erosion in properly managed stands. The length and steepness of slopes, the soil textures, and permeability are among the factors considered. The hazard of erosion is *slight* if it does not present a problem; it is *moderate* if special management is needed to prevent erosion during harvesting operations and in cleared areas; it is *severe* if intensive management is needed to control erosion.

Under *Potential productivity* are listed the important trees in each woodland suitability group. The estimated site index for the trees is shown. A site index is the average height of the dominant trees in a stand at age 30 for cottonwood, age 35 for sycamore, and age 50 for other species.

Under *Preferred species* are listed the kinds of trees to be favored in management of existing stands, and the kind preferred for planting in existing woodland or where woodland is to be established. Species were selected on the basis of their growth and of the quality, value, and marketability of the products obtained from each.

Production of native forage

The amount of forage produced in areas of woodland or savanna varies with the age of the trees, the density of the tree canopy, and the condition of the understory vegetation. For the purposes of this survey, four tree canopy classes are recognized. An open canopy shades up to 20 percent of the ground at midday; a sparse canopy, 21 to 35 percent; a medium canopy, 36 to 55 percent; and a dense canopy, 56 to 70 percent. If the canopy shades more than 70 percent of the ground at midday, little or no forage is produced. The potential yields of forage by tree canopy classes are shown for each woodland suitability group in table 7.

Forage condition is the present state of the understory vegetation compared with the potential for the stated woodland suitability group of soils. Four classes of forage condition are recognized. They provide a measure of any deterioration that has taken place and a basis for predicting the degree of improvement that can be brought about by management. *Excellent* forage condition indicates that the present forage species make up more than 75 percent of the potential; *good* condition, between 51 and 75 percent; *fair* condition, between 26 and 50 percent; and *poor* condition, less than 25 percent.

The principal forage plants listed in table 5 are those that produce most of the forage when the vegetation is in excellent condition and the tree canopy is 45 percent or less. As the tree canopy closes, the more desirable forage plants are replaced by less productive shade-tolerant or woody plants, and the production of forage is progressively less.

Most of the savanna is used for range. Savanna that has been well managed approaches the natural state of scattered trees and a dense understory of tall grasses. In other tracts, the forage plants have decreased while poor-quality hardwood trees and brush have increased. Control of woody vegetation along with control of grazing allows native grasses to recover and increase the forage yield.

Use of the Soils in Engineering [6]

This section is useful to those who need information about soils used as structural material or as foundation upon which structures are built. Among those who can benefit from this section are planning commissions, town and city managers, land developers, engineers, contractors, and farmers.

Among soil properties that are highly important in engineering are permeability, strength, compaction characteristics, soil drainage, shrink-swell potential, grain size, plasticity, and soil reaction. Also important are depth to the water table, depth to bedrock, and soil slope. These properties, in various degrees and combinations, affect

[6] VANCE B. FINCH, civil engineer, Soil Conservation Service, helped to prepare this section.

species, and understory forage yields by woodland groups of soils—Continued

Preferred species—		Understory vegetation utilized as forage	
In existing woodland	For planting	Principal forage plants (excellent condition)	Estimated yields of air-dry forage by tree canopy class
			Lb. per acre
Shortleaf pine, redcedar, southern red oak, white oak, black walnut, black cherry.	Loblolly pine, shortleaf pine, redcedar; on north and east slopes, coves, and slope bases, black walnut, black locust, and southern red oak.	Little bluestem, big bluestem, indiangrass, Canada wildrye, low panicums, native lespedezas, perennial sunflowers.	Open canopy 3,000 to 6,000; sparse canopy 2,000 to 4,500; medium canopy 1,000 to 2,500; dense canopy 200 to 1,500.
Shortleaf pine, redcedar	Loblolly pine, shortleaf pine, redcedar.	Little bluestem, big bluestem, indiangrass, low panicums, native legumes, forbs.	Open canopy 2,500 to 4,800; sparse canopy 1,500 to 3,500; medium canopy 1,000 to 2,000; dense canopy 100 to 1,000.
		Switchgrass, little bluestem, paspalums, dropseeds, sedges.	Open canopy 1,500 to 3,000; sparse canopy 1,200 to 2,500; medium canopy 800 to 2,000; dense canopy 100 to 1,000.

construction and maintenance of roads, airports, pipelines, foundations for small buildings, irrigation systems, ponds and small dams, and systems for disposal of sewage and refuse.

Information in this section of the soil survey can be helpful to those who—

1. Select potential residential, industrial, commercial, and recreational areas.
2. Evaluate alternate routes for roads, highways, pipelines, and underground cables.
3. Seek sources of gravel, sand, or clay.
4. Plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for controlling water and conserving soil.
5. Correlate performance of structures already built with properties of the kind of soil on which they are built, for the purpose of predicting performance of structures on the same or similar kinds of soil in other locations.
6. Predict the trafficability of soils for cross-country movement of vehicles and construction equipment.
7. Develop preliminary estimates pertinent to construction in a particular area.

Most of the information in this section is presented in tables 6, 7, and 8, which show, respectively, several estimated soil properties significant to engineering, interpretations for various engineering uses, and results of engineering laboratory tests on soil samples.

This information, along with the soil map and other parts of this publication, can be used to make interpretations in addition to those given in the tables. It also can be used to make other useful maps.

This information, however, does not eliminate need for further investigation at sites selected for engineering works, especially works that involve heavy loads or that require excavation to depths greater than those shown in table 6, generally depths greater than 6 feet. Also, inspection of sites, especially the small ones, is needed because many delineated areas of a given soil mapping unit contain small areas of other kinds of soil that have strongly contrasting properties and different suitabilities or limitations for soil engineering.

Some of the terms used in this soil survey have a special meaning to soil scientists that is not known to all engineers. The Glossary defines many of these terms commonly used in soil science.

Engineering soil classification systems

The two systems most commonly used in classifying samples of soils for engineering are the Unified system used by SCS engineers, the Department of Defense, and others (*18*) and the AASHO system adopted by the American Association of State Highways Officials (*1*).

In the Unified system soils are classified according to particle-size distribution, plasticity, liquid limit, and organic matter. Soils are grouped in 15 classes. There are eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes are designated by symbols for both classes; for example, ML-CL.

The AASHO system is used to classify soils according to those properties that affect use in highway construction and maintenance. In this system, a soil is placed in one of seven basic groups ranging from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A-1 are gravelly soils of high bearing strength, or the best soils for subgrade (foundation). At the other extreme, in group A-7, are clay soils that have low strength when wet and that are the poorest soils for subgrade. Where laboratory data are available to justify a further breakdown, the A-1, A-2, and A-7 groups are divided as follows: A-1-a, A-

TABLE 6.—*Estimated soil properties*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil, which may for referring to another series. The symbol > means more than;

Soil series and map symbols	Depth to— Bedrock	Depth to— Seasonal high water table	Depth from surface	Classification: USDA texture	Classification: Unified	Classification: AASHO	Coarse fraction (greater than 3 inches in diameter)
	Feet	*Feet*	*Inches*				*Percent*
*Amagon: Af. For Forestdale part, see Forestdale series.	>6	0–½	0–13	Silt loam	ML	A–4	
			13–28	Silty clay loam	CL or CH	A–6 or A–7	
			28–41	Silt loam	CL	A–6 or A–7	
			41–60	Silty clay loam	CL or CH	A–6 or A–7	
			60–72	Silt loam	ML or CL	A–4 or A–6	
Beulah: BeU	>6	>6	0–42	Fine sandy loam	SM	A–2 or A–4	
			42–72	Loamy fine sand	SM	A–2	
Bosket: BoA, BoU	>6	>6	0–17	Fine sandy loam	SM	A–4	
			17–38	Sandy clay loam	SM or SC	A–4	
			38–50	Fine sandy loam	SM	A–4	
			50–72	Loamy fine sand	SM	A–2	
Calhoun: Mapped only with Foley soils.	>6	0–½	0–14	Silt loam	ML or CL	A–4	
			14–72	Silt loam	CL or ML	A–6	
*Crowley: Co, Cr. For Hillemann part of Cr, see Hillemann series.	>6	0–½	0–12	Silt loam	ML or CL	A–4	
			12–39	Silty clay	CH	A–7	
			39–46	Silty clay loam	CL or CH	A–6 or A–7	
			46–72	Silt loam	ML or CL	A–4 or A–6	
Dexter: De, DeU	>6	>6	0–7	Silt loam	ML or CL	A–4	
			7–48	Silty clay loam	CL	A–6	
			48–63	Loam	ML or CL	A–4 or A–6	
			63–72	Loamy fine sand	SM	A–2	
Dundee: DvA, DvU	>6	½–1	0–12	Silt loam	ML or CL	A–4	
			12–42	Silty clay loam	CL	A–6	
			42–72	Silt loam	ML or CL	A–4 or A–6	
Egam: Eg	>6	3–5	0–8	Silt loam	ML or CL	A–4 or A–6	
			8–46	Silty clay loam	CL or CH	A–6 or A–7	
			46–72	Silt loam	ML or CL	A–4 or A–6	
Enders: EnD, EsE	3½–5	>6	0–6	Silt loam	ML or CL	A–4	0–20
			6–11	Loam	ML or CL	A–4	0–20
			11–33	Clay	MH or CH	A–7	
			33–41	Silty clay	MH or CH	A–7	

See footnotes at end of table.

significant to engineering

have different properties and limitations. For this reason the reader should follow carefully the instructions in the first column of this table < means less than. Absence of data means that no estimate was made]

Percentage of material less than 3 inches in diameter passing sieve				Liquid limit	Plasticity index	Permeability [1]	Available water capacity	Reaction	Shrink-swell potential	Corrosivity to—	
No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)							Uncoated steel	Concrete
						Inches/hour	*In./in. of soil*	*pH*			
--------	95–100	95–100	90–100	--------	[2] NP	0.6–2.0	0.21–0.23	4.5–6.0	Low	High	Moderate to high.
--------	100	95–100	95–100	40–60	30–40	0.06–0.2	0.20–0.22	4.5–6.0	Moderate	High	Moderate to high.
--------	100	95–100	90–100	30–45	12–25	0.2–0.6	0.21–0.23	4.5–6.0	Low to moderate.	High	Moderate to high.
--------	95–100	95–100	95–100	40–60	30–40	0.06–0.2	0.20–0.22	4.5–6.0	Moderate	High	Moderate to high.
--------	100	95–100	90–100	30–45	8–15	0.2–0.6	0.21–0.23	4.5–6.0	Low	High	Moderate to high.
--------	100	85–100	25–45	--------	NP	2.0–6.0	0.13–0.16	5.1–6.0	Low	Low	Moderate.
--------	100	75–95	15–35	--------	NP	2.0–6.0	0.08–0.12	5.1–6.0	Low	Low	Moderate to high.
--------	100	90–100	40–50	--------	NP	0.6–2.0	0.13–0.16	5.1–6.0	Low	Low	Moderate.
--------	100	90–100	36–50	25–35	7–10	0.6–2.0	0.15–0.18	4.5–5.5	Low	Low	Moderate to high.
--------	100	90–100	36–50	--------	NP	0.6–2.0	0.13–0.16	4.5–5.5	Low	Low	Moderate to high.
--------	100	75–95	15–35	--------	NP	2.0–6.0	0.08–0.12	4.5–5.5	Low	Low	High.
--------	--------	100	95–100	<30	NP–10	0.2–0.6	0.21–0.23	5.1–6.0	Low	High	Moderate.
--------	--------	100	95–100	30–40	10–25	0.06–0.2	0.21–0.23	4.5–7.8	Low to moderate.	High	Low to high.
--------	--------	100	90–100	<25	NP–10	0.2–0.6	0.21–0.23	4.5–6.0	Low	High	Moderate to high.
--------	--------	100	95–100	50–65	35–50	<0.06	0.18–0.20	4.5–5.5	High	High	Moderate to high.
--------	--------	100	95–100	35–55	25–35	0.06–0.2	0.20–0.22	5.6–7.3	Moderate	High	Moderate to low.
--------	--------	100	95–100	30–40	5–20	0.2–0.6	0.21–0.23	6.1–8.4	Low	High	Low.
--------	100	80–100	75–95	20–40	NP–10	0.6–2.0	0.21–0.23	5.6–7.3	Low	Low	Moderate to low.
--------	100	90–100	80–100	25–35	15–25	0.6–2.0	0.21–0.22	4.5–6.0	Moderate	Moderate	Moderate.
--------	100	80–100	55–75	10–40	10–20	0.6–2.0	0.15–0.18	4.5–5.5	Low	Low	Moderate to high.
--------	100	75–95	15–35	--------	NP	2.0–6.0	0.08–0.12	4.5–5.5	Low	Low	High.
--------	100	85–100	80–95	<30	NP–10	0.6–2.0	0.21–0.23	4.5–6.0	Low	High	Moderate to high.
--------	100	90–100	80–95	30–40	15–25	0.2–0.6	0.20–0.22	4.5–6.0	Moderate	High	Moderate to high.
--------	100	85–100	80–95	30–40	8–15	0.2–0.6	0.21–0.23	4.5–6.0	Low	High	Moderate to high.
--------	100	95–100	90–100	30–40	8–15	0.6–2.0	0.21–0.23	6.1–7.3	Low	Low	Low.
--------	100	95–100	90–100	35–55	25–35	0.2–0.6	0.20–0.22	6.1–7.3	Moderate	Moderate	Low.
--------	100	75–95	75–90	30–40	8–15	0.6–2.0	0.21–0.23	5.6–7.3	Low	Moderate	Low to moderate.
90–100	90–100	80–95	75–90	25–35	7–10	0.6–2.0	0.18–0.23	4.5–7.3	Low	Low	High to low.
90–100	90–100	80–95	60–80	25–35	7–10	0.6–2.0	0.12–0.18	4.5–5.5	Low	Low	Moderate to high.
95–100	95–100	90–100	85–95	65–80	35–45	<0.06	0.17–0.20	4.5–5.5	High	High	Moderate to high.
95–100	90–100	85–100	80–95	65–80	35–45	<0.06	0.17–0.20	4.5–5.5	High	High	Moderate to high.

TABLE 6.—*Estimated soil properties*

Soil series and map symbols	Depth to— Bedrock	Depth to— Seasonal high water table	Depth from surface	Classification: USDA texture	Classification: Unified	Classification: AASHO	Coarse fraction (greater than 3 inches in diameter)
	Feet	*Feet*	*Inches*				*Percent*
*Foley: Fc, Fm. For Calhoun part see Calhoun series; for McCrory part of Fm, see McCrory series.	>6	0–½	0–12	Silt loam	ML or CL	A–4 or A–6	
			12–22	Silty clay loam	CL or CH	A–7	
			22–24	Silty clay loam	CL or CH	A–7	
			42–66	Silt loam	CL	A–6	
			66–72	Fine sandy loam	SM or ML	A–4	
Forestdale. Mapped with Amagon soils.	>6	0–½	0–14	Silt loam	ML or CL	A–4 or A–6	
			14–26	Silty clay loam	CL or CH	A–6 or A–7	
			26–72	Silty clay	CH	A–7	
Fo	>6	0–½	0–14	Silty clay loam	CL or CH	A–6 or A–7	
			14–72	Silty clay	CH	A–7	
Grubbs: Gb	>6	½–1	0–8	Silt loam	ML or CL	A–4	
			8–30	Clay and silty clay	CH	A–7	
			30–60	Silt loam	CL or ML	A–4 or A–6	
			60–72	Loam	ML or CL	A–4 or A–6	
Hector. Mapped only with Linker soils.	¾–1½	>1½	0–12	Stony fine sandy loam	SM or ML	A–2 or A–4	15–25
Hillemann. Mapped only with Crowley soils.	>6	½–1	0–16	Silt loam	ML or CL	A–4	
			16–23	Silty clay loam	CL or CH	A–6 or A–7	
			23–55	Silt loam	CL or ML	A–4 or A–6	
			55–75	Clay	CH	A–7	
Jackport: Ja	>6	0–½	0–4	Silty clay loam	CL or CH	A–6 or A–7	
			4–33	Clay and silty clay	CH	A–7	
			33–46	Silty clay	CH	A–7	
			46–65	Silty clay loam	CL or CH	A–6 or A–7	
Lafe: La	>6	½–1½	0–7	Silt loam	ML or CL	A–4	
			7–13	Silty clay loam	CL or CH	A–7	
			13–24	Silty clay loam	CL or CH	A–7	
			24–37	Silt loam	CL or ML	A–4 or A–6	
			37–72	Fine sandy loam	SM	A–2 or A–4	

See footnotes at end of table.

significant to engineering—Continued

Percentage of material less than 3 inches in diameter passing sieve				Liquid limit	Plasticity index	Permeability [1]	Available water capacity	Reaction	Shrink-swell potential	Corrosivity to—	
No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)							Uncoated steel	Concrete
						Inches/hour	*In./in. of soil*	*pH*			
--------	100	95–100	90–100	35–40	8–20	0.6–2.0	0.21–0.23	5.1–6.5	Low to moderate.	High	Low to moderate.
--------	100	95–100	90–100	45–60	32–40	0.2–0.6	0.20–0.22	5.6–7.3	Moderate	High	Low to moderate.
--------	100	95–100	90–100	45–60	32–40	0.06–0.2	0.12–0.15	6.6–8.4	Moderate	High	Low to moderate.
--------	100	95–100	90–100	35–40	25–35	0.2–0.6	0.12–0.15	6.6–8.4	Low to moderate.	High	Low.
--------	100	90–100	40–60	<20	NP–4	0.6–2.0	0.10–0.12	6.6–8.4	Low	High	Low.
--------	100	95–100	90–100	10–30	NP–15	0.2–0.6	0.21–0.23	4.5–6.0	Low to moderate.	High	Moderate to high.
--------	--------	100	95–100	40–60	30–40	0.06–0.2	0.20–0.22	4.5–5.5	Moderate	High	Moderate to high.
--------	--------	100	95–100	55–65	35–45	<0.06	0.18–0.20	4.5–5.5	High	High	Moderate to high.
--------	--------	100	95–100	40–60	30–40	0.06–0.2	0.20–0.22	4.5–6.0	Moderate	High	Moderate to high.
--------	--------	100	95–100	55–65	35–45	<0.06	0.18–0.20	4.5–5.5	High	High	Moderate to high.
--------	100	95–100	90–100	<25	NP–10	0.6–2.0	0.21–0.23	5.1–6.5	Low	High	Moderate to low.
--------	--------	100	95–100	50–65	35–50	<0.06	0.18–0.20	4.5–6.0	High	High	Moderate to high.
--------	100	95–100	90–100	20–40	7–20	0.2–0.6	0.12–0.15	6.1–8.4	Low to moderate.	High	Low.
--------	100	80–100	50–75	10–40	7–15	0.2–0.6	0.10–0.12	6.1–8.4	Low	High	Low.
75–95	75–90	65–80	30–60	--------	NP	2.0–6.0	0.05–0.08	4.5–6.0	Low	Low	Moderate to high.
--------	100	95–100	90–100	<25	NP–10	0.2–0.6	0.21–0.23	4.5–6.0	Low	High	Moderate to high.
--------	100	95–100	95–100	30–55	25–35	0.06–0.2	0.16–0.22	4.5–5.5	Moderate	High	Moderate to high.
--------	100	95–100	95–100	20–40	7–20	0.2–0.6	0.16–0.18	5.1–7.8	Low to moderate.	High	Moderate to low.
--------	--------	100	95–100	55–65	35–50	0.06–0.2	0.15–0.17	6.1–7.8	High	High	Low.
--------	--------	100	95–100	30–55	25–35	0.06–0.2	0.20–0.22	5.1–6.0	Moderate	High	Moderate.
--------	--------	100	95–100	55–75	40–55	<0.06	0.18–0.20	4.5–5.5	High	High	Moderate to high.
--------	--------	100	95–100	55–75	40–50	<0.06	0.18–0.20	4.5–6.5	High	High	Moderate to low.
--------	100	95–100	95–100	30–55	25–35	0.06–0.2	0.20–0.22	5.1–7.3	Moderate	High	Moderate to low.
--------	100	90–100	75–95	<25	NP–10	0.2–0.6	0.19–0.23	5.1–6.5	Low	High	Moderate to low.
--------	100	95–100	85–95	45–60	32–40	0.06–0.2	0.10–0.14	5.6–7.3	Moderate	High	Moderate to low.
--------	100	95–100	85–95	45–60	32–40	<0.06	0.10–0.14	7.4–8.4	Moderate	High	Low.
--------	100	95–100	80–95	30–40	10–25	0.06–0.2	0.10–0.14	7.4–8.4	Low	High	Low.
--------	100	90–100	20–40	--------	NP	0.2–0.6	0.08–0.10	7.4–8.4	Low	High	Low.

TABLE 6.—*Estimated soil properties*

Soil series and map symbols	Depth to— Bedrock	Depth to— Seasonal high water table	Depth from surface	Classification: USDA texture	Classification: Unified	Classification: AASHO	Coarse fraction (greater than 3 inches in diameter)
	Feet	*Feet*	*Inches*				*Percent*
Leadvale: LdB, LdC, LeD	>3	2-3	0-7	Silt loam	ML or CL	A-4	(3)
			7-24	Silt loam	ML or CL	A-4 or A-6	
			24-32	Silt loam	ML or CL	A-4 or A-6	
			32-46	Clay loam	CL	A-6	
			46-60	Sandy clay loam	SC, SM, CL, or ML	A-4 or A-6	
*Linker:							
LfC	2-4	>4	0-7	Fine sandy loam	SM or ML	A-4	0-5
			7-27	Loam	ML, CL, SM, or SC	A-4 or A-6	0-10
			27-41	Flaggy fine sandy loam.	SM or SC	A-2 or A-4	10-25
LhF. For Hector part of LhF, see Hector series.	2-4	>4	0-7	Stony fine sandy loam.	SM or ML	A-4	10-25
			7-27	Stony loam	ML, CL, SM, or SC	A-4 or A-6	10-25
			27-41	Flaggy fine sandy loam.	SM or SC	A-2 or A-4	10-25
McCrory. Mapped only with Foley soils.	>6	0-½	0-16	Fine sandy loam	SM or ML	A-4	
			16-22	Fine sandy loam	SM, SC, ML, or CL	A-4	
			22-33	Fine sandy loam	SM, SC, ML, or CL	A-4	
			33-62	Fine sandy loam	SM or ML	A-4	
			62-72	Loamy fine sand	SM	A-2 or A-4	
Mountainburg: MoD	1-1½	1½	0-4	Stony fine sandy loam	GM or SM	A-2	15-30
			4-17	Gravelly loam	GM or GC	A-2	5-20
Patterson: Pa	>6	½-1	0-72	Fine sandy loam	SM	A-2 or A-4	
Sequatchie: Se	>6	4-6	0-30	Loam	SM or ML	A-4	
			30-72	Fine sandy loam	SM	A-2 or A-4	
Sharkey: Sh	>6	0-½	0-3	Silty clay loam	CL or CH	A-7	
			3-72	Clay and silty clay	CH	A-7	
Staser: St	>6	3-5	0-33	Silt loam	ML or CL	A-4	
			33-47	Loam	ML or CL	A-4	
			47-72	Fine sand	SM	A-2	

[1] Permeability values should not be confused with the coefficient K used by engineers.
[2] NP means nonplastic.

significant to engineering—Continued

Percentage of material less than 3 inches in diameter passing sieve— No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)	Liquid limit	Plasticity index	Permeability [1]	Available water capacity	Reaction	Shrink-swell potential	Corrosivity to— Uncoated steel	Concrete
						Inches/hour	*In./in. of soil*	*pH*			
95–100	90–100	85–95	75–95	20–30	NP–10	0.6–2.0	0.21–0.23	5.1–6.5	Low	Moderate	Moderate to low.
95–100	95–100	80–95	80–95	20–35	7–15	0.6–2.0	0.21–0.23	4.5–5.5	Low	Moderate	Moderate to high.
95–100	95–100	80–95	80–95	20–35	7–15	0.2–0.6	0.15–0.17	4.5–5.5	Low	Moderate	Moderate to high.
95–100	95–100	70–80	70–80	30–40	15–25	0.2–0.6	0.15–0.17	4.5–5.5	Low	Moderate	Moderate to high.
95–100	95–100	40–60	40–60	20–40	8–20	0.2–0.6	0.12–0.14	4.5–5.5	Low	Moderate	Moderate to high.
90–100	90–100	65–85	40–60	-------	NP	0.6–2.0	0.12–0.16	5.1–6.0	Low	Low	Moderate.
90–100	90–100	70–90	45–65	20–30	7–15	0.6–2.0	0.15–0.18	4.5–5.5	Low	Low	Moderate to high.
90–100	85–95	65–85	20–40	<20	NP–8	0.6–2.0	0.10–0.14	4.5–5.5	Low	Low	Moderate to high.
90–100	85–95	60–80	40–55	-------	NP	0.6–2.0	0.10–0.14	5.1–6.0	Low	Low	Moderate.
90–100	85–95	60–80	45–60	20–30	7–15	0.6–2.0	0.12–0.16	4.5–5.5	Low	Low	Moderate to high.
90–100	85–95	60–80	20–40	<20	NP–8	0.6–2.0	0.10–0.14	4.5–5.5	Low	Low	Moderate to high.
--------	100	70–95	40–65	10–20	NP–4	0.6–2.0	0.12–0.16	5.1–6.0	Low	High	Moderate.
--------	100	70–95	40–65	15–30	NP–10	0.2–0.6	0.10–0.14	5.1–6.5	Low	High	Moderate to low.
--------	100	70–95	40–65	15–30	NP–10	0.2–0.6	0.10–0.12	6.1–8.4	Low	High	Low.
--------	100	70–95	40–65	10–20	NP–4	0.2–0.6	0.10–0.12	6.6–8.4	Low	High	Low.
--------	100	60–85	25–40	-------	NP	0.6–2.0	0.05–0.10	6.6–8.4	Low	High	Low.
45–75	40–60	25–45	15–30	-------	NP	2.0–6.0	0.05–0.08	5.1–6.0	Low	Low	Moderate.
45–65	40–65	30–50	25–35	<20	NP–8	2.0–6.0	0.08–0.12	4.5–5.5	Low	Low	Moderate to high.
--------	100	75–100	25–45	<25	NP–4	2.0–6.0	0.12–0.16	4.5–6.0	Low	High	Moderate to high.
95–100	90–100	85–100	45–70	<25	NP–4	2.0–6.0	0.15–0.18	5.1–6.0	Low	Low	Moderate.
95–100	90–100	80–95	20–45	<25	NP–4	2.0–6.0	0.12–0.16	5.1–6.0	Low	Low	Moderate.
--------	100	95–100	95–100	40–55	25–35	0.06–0.2	0.20–0.22	6.1–7.8	Moderate	High	Low.
--------	100	95–100	95–100	55–70	40–60	<0.06	0.18–0.20	6.1–7.8	High	High	Low.
--------	100	95–100	75–95	20–30	NP–10	0.6–2.0	0.21–0.23	6.1–7.3	Low	Low	Low.
--------	100	95–100	55–65	20–35	2–10	0.6–2.0	0.15–0.18	6.1–7.3	Low	Low	Low.
--------	100	90–100	12–25	-------	NP	2.0–6.0	0.05–0.08	6.1–7.3	Low	Low	Low.

[3] Colluvial stones cover 2 to 5 percent of the surface area of mapping unit LeD.

TABLE 7.—*Interpretations of*

[An asterisk in the first column indicates that at least one mapping unit in this series is made up of two or more kinds of soil, which may for referring to

Soil series and map symbols	Suitability as a source of— Topsoil	Road fill	Sand
*Amagon: Af. For Forestdale part, see Forestdale series.	Poor: poorly drained.	Poor: poorly drained; low traffic-supporting capacity.	Not suitable: no sand.
Beulah: BeU	Good	Fair: excessive fines; good below a depth of 42 inches.	Poor: excessive fines.
Bosket: BoA, BoU	Good	Fair: excessive fines; good below a depth of 50 inches.	Poor: excessive fines.
Calhoun. Mapped only with Foley soils.	Poor: poorly drained.	Poor: poorly drained; moderate to low traffic-supporting capacity.	Not suitable: no sand.
*Crowley: Co, Cr. For Hillemann part of Cr, see Hillemann series.	Poor: poorly drained; clayey below a depth of 12 inches.	Poor: poorly drained; low traffic-supporting capacity; high shrink-swell potential.	Not suitable: no sand.
Dexter: De, DeU	Good to a depth of 7 inches; fair to a depth of 48 inches.	Fair to a depth of 63 inches; moderate traffic-supporting capacity; moderate to low shrink-swell potential; good below a depth of 63 inches.	Not suitable to a depth of 63 inches; no sand. Poor below a depth of 63 inches; excessive fines.
Dundee: DvA, DvU	Good to a depth of 12 inches; fair to a depth of 42 inches.	Fair: moderate traffic-supporting capacity; somewhat poorly drained.	Not suitable: no sand.
Egam: Eg	Good to a depth of 8 inches; fair to a depth of 46 inches.	Fair to poor: moderate to low traffic-supporting capacity; moderate to low shrink-swell potential.	Not suitable: no sand.
Enders: EnD, EsE	Poor: clayey material below a depth of 11 inches difficult to reclaim; surface stoniness; slopes 12 to 25 percent on EsE.	Poor: low traffic-supporting capacity; high shrink-swell potential.	Not suitable: no sand.

engineering properties

have different properties and limitations. For this reason the reader should follow carefully the instructions in the first column of this table another series]

Soil features affecting—				
Pond reservoir areas	Embankments, dikes, and levees	Drainage of cropland and pasture	Irrigation	Land grading and smoothing for farming
Soil features generally favorable; seasonal high water table.	Poor to fair stability and compaction characteristics; medium to high compressibility; fair resistance to piping where well mixed.	Poorly drained; seasonal high water table; slow permeability; ponding on surface.	Slow intake rate; high available water capacity.	Shallow depressions in surface; difficult to grade in wet seasons; poorly drained; seasonal high water table.
Moderately rapid permeability.	Fair compaction characteristics; moderate permeability when compacted; poor resistance to piping and erosion.	Somewhat excessively drained.	Moderate to rapid intake rate; low available water capacity; irregular surface.	Depth of cuts limited; loamy fine sand below a depth of 42 inches.
Moderate permeability in upper 50 inches; moderately rapid permeability below a depth of 50 inches.	Fair to good compaction characteristics; low to moderate permeability when compacted; poor resistance to piping and erosion.	Well drained	Moderate intake rate; moderate available water capacity; irregular surface on BoU.	Loamy fine sand below a depth of 50 inches; soil features generally favorable on BoA; depth of cuts limited in BoU.
Soil features generally favorable; seasonal high water table.	Poor to fair stability and compaction characteristics; medium to high compressibility; fair to poor resistance to piping; vegetation difficult to establish on subsoil fill material.	Poorly drained; seasonal high water table; slow permeability; ponding on surface.	Slow intake rate; high available water capacity.	Shallow depressions in surface; difficult to grade in wet seasons; poorly drained; seasonal high water table; depth of cut limited by high sodium content in middle and lower parts of subsoil.
Soil features generally favorable; seasonal high water table.	Fair to poor stability and compaction characteristics; medium to high compressibility; high shrink-swell potential.	Poorly drained; seasonal high water table; very slow permeability; ponding on surface.	Slow to very slow intake rate; high available water capacity.	Shallow depressions on surface; difficult to grade in wet seasons; poorly drained; seasonal high water table; clayey material below a depth of 12 inches.
Moderate permeability to a depth of 63 inches; moderately rapid permeability below a depth of 63 inches.	Fair to good stability and compaction characteristics; medium to high compressibility to a depth of 63 inches; poor resistance to piping below a depth of 63 inches.	Well drained soil	Moderate intake rate; high available water capacity; irregular surface on DeU.	Loamy fine sand below a depth of 63 inches; soil features generally favorable on De; depth of cut limited on DeU.
Moderately slow permeability; seasonal high water table.	Poor to fair stability and compaction characteristics; medium to high compressibility; fair resistance to piping where well mixed.	Somewhat poorly drained; seasonal high water table; moderately slow permeability; ponding in swales of DvU.	Slow intake rate; high available water capacity; irregular surface on DvU.	Shallow depressions on surface; somewhat poorly drained; seasonal high water table; somewhat difficult to grade in wet seasons.
Moderately slow perpermeability.	Poor to fair stability and compaction characteristics; medium to high compressibility; fair resistance to piping where well mixed.	Moderately well drained; subject to occasional flooding.	Slow intake rate; high available water capacity.	Shallow depressions on surface; subsoil somewhat plastic and difficult to grade in wet seasons.
Very slow permeability; rippable shale bedrock at a depth of 40 to 60 inches; moderately steep slopes on EsE limit storage potential.	Fair to poor stability and compaction characteristics; high compressibility; high shrink-swell potential; poor slope stability.	Well drained	Very slow intake rate; high available water capacity; rapid runoff; soil generally not suitable for crops.	Slopes exceed 3 percent; deep cuts into infertile subsoil necessary; exposed subsoil difficult to reclaim.

TABLE 7.—*Interpretations of*

Soil series and map symbols	Suitability as a source of—		
	Topsoil	Road fill	Sand
*Foley: Fc, Fm. For Calhoun part, see Calhoun series; for McCrory part of Fm, see McCrory series.	Poor: poorly drained; high sodium content in subsoil; difficult to reclaim.	Poor: poorly drained; moderate to low traffic-supporting capacity; high sodium content in subsoil; difficult or impossible to reclaim.	Not suitable: no sand
Forestdale: Fo	Poor: poorly drained	Poor: poorly drained; low traffic-supporting capacity; high shrink-swell potential.	Not suitable: no sand
Grubbs: Gb	Poor: 8 inches or less of good material underlain by plastic clay; difficult to reclaim.	Poor: somewhat poorly drained; low traffic-supporting capacity; high shrink-swell potential; high sodium content in lower part of subsoil; difficult or impossible to reclaim.	Not suitable: no sand
Hector. Mapped only with Linker soils.	Poor: high content of coarse fragments; sandstone bedrock at a depth of 9 to 18 inches; cannot be reclaimed.	Poor: 9 to 18 inches of fair to good material over sandstone bedrock; cannot be reclaimed.	Not suitable: no sand
Hillemann. Mapped only with Crowley soils.	Fair to poor: 16 inches of good material underlain by poor material high in sodium content; difficult to reclaim.	Poor: moderate to low traffic-supporting capacity; low to moderate shrink-swell potential to a depth of 55 inches; high shrink-swell potential below.	Not suitable: no sand
Jackport: Ja	Poor: predominantly plastic, clayey material.	Poor: low traffic-supporting capacity; high shrink-swell potential; plastic, clayey material.	Not suitable: no sand
Lafe: La	Poor: high sodium content within a few inches of surface.	Poor: low traffic-supporting capacity; high sodium content; difficult to stabilize.	Not suitable: no sand

engineering properties—Continued

Soil features affecting—				
Pond reservoir areas	Embankments, dikes, and levees	Drainage of cropland and pasture	Irrigation	Land grading and smoothing for farming
Soil features generally favorable; seasonal high water table.	Fair to poor stability and compaction characteristics; medium to high compressibility; vegetation difficult to establish on subsoil fill; material is dispersed and highly erodible.	Poorly drained; seasonal high water table; slow permeability; ponding on surface.	Slow intake rate; moderate available water capacity.	Shallow depressions in surface; difficult to grade in wet seasons; poorly drained; seasonal high water table; high sodium content in middle part of subsoil limits practical depth of cut.
Soil features generally favorable; seasonal high water table.	Fair to poor stability and compaction characteristics; high compressibility; high shrink-swell potential; poor slope stability.	Poorly drained; seasonal high water table; very slow permeability; ponding on surface.	Slow to very slow intake rate; high available water capacity.	Shallow depressions in surface; difficult to grade in wet seasons; poorly drained; seasonal high water table.
Soil features generally favorable; seasonal high water table.	Fair to poor stability and compaction characteristics; medium to high compressibility; good resistance to piping where well mixed; about 2 feet of material has high shrink-swell potential; lower part of subsoil is dispersed, difficult to vegetate; highly erodible.	Somewhat poorly drained; seasonal high water table; very slow permeability.	Slow intake rate; very slow intake rate below a depth of 8 inches; moderate to high available water capacity.	Shallow depressions in surface; difficult to grade in wet seasons; somewhat poorly drained; seasonal high water table; cuts deeper than 8 inches expose clayey material that is difficult to till.
Moderately rapid permeability; sandstone bedrock within 18 inches of surface.	Limited volume of material; high content of cobbles and stones; moderate permeability when compacted; poor resistance to piping.	Well drained	Stony; moderately steep to steep; rapid runoff; generally not suitable for crops; low productivity.	Practice not applicable.
Soil features generally favorable; seasonal high water table.	Fair to poor stability and compaction characteristics; medium to high compressibility; subsoil fill difficult to vegetate; material is dispersed and highly erodible.	Somewhat poorly drained; slow permeability; seasonal high water table.	Slow intake rate; moderate available water capacity.	Shallow depressions and a few low ridges on surface; somewhat poorly drained; seasonal high water table; high sodium content in subsoil limits practical depth of cut.
Soil features generally favorable; seasonal high water table.	Fair to poor stability and compaction characteristics; high compressibility; high shrink-swell potential; plastic, clayey material.	Somewhat poorly drained; very slow permeability; seasonal high water table.	Very slow intake rate; high available water capacity.	Shallow depressions in surface; somewhat poorly drained; seasonal high water table; plastic, clayey material; difficult to work in wet seasons.
Soil features generally favorable; seasonal high water table.	Fair to poor stability and compaction characteristics; medium to high compressibility; difficult to vegetate; material is dispersed and highly erodible.	Somewhat poorly drained; very slow permeability; seasonal high water table; drainage generally not feasible.	Very slow intake rate; low available water capacity; irrigation generally not feasible.	High sodium content within a few inches of surface; land grading generally not feasible.

TABLE 7.—*Interpretations of*

Soil series and map symbols	Suitability as a source of— Topsoil	Road fill	Sand
Leadvale: LdB, LdC	Fair: material below a depth of 24 inches somewhat difficult to reclaim.	Fair: moderate traffic-supporting capacity.	Not suitable: no sand
LeD	Fair to poor: slopes 8 to 12 percent; surface stoniness; material below excavated depth somewhat difficult to reclaim.	Fair: moderate traffic-supporting capacity; surface stoniness.	Not suitable: no sand
*Linker: LfC	Fair: moderate content of coarse fragments.	Fair: moderate to high traffic-supporting capacity.	Not suitable: no sand
LhF. For Hector part, see Hector series.	Poor: high content of coarse fragments; slopes 12 to 40 percent.	Fair to poor: moderate to high traffic-supporting capacity; slopes 12 to 40 percent.	Not suitable: no sand
McCrory. Mapped only with Foley soils.	Poor: poorly drained; high sodium content in subsoil; difficult to reclaim.	Poor: poorly drained; moderate traffic-supporting capacity.	Not suitable: no sand above a depth of 62 inches; poor below a depth of 62 inches; excessive fines.
Mountainburg: MoD	Poor: high content of coarse fragments; sandstone bedrock at a depth of 12 to 20 inches; cannot be reclaimed.	Poor: 12 to 20 inches of fair to good material over sandstone bedrock; cannot be reclaimed.	Not suitable: no sand
Patterson: Pa	Good	Fair to good: somewhat poorly drained.	Not suitable to poor: excessive fines.
Sequatchie: Se	Good	Fair to good: moderate to high traffic-supporting capacity.	Not suitable to poor: excessive fines.

engineering properties—Continued

Soil features affecting—				
Pond reservoir areas	Embankments, dikes, and levees	Drainage of cropland and pasture	Irrigation	Land grading and smoothing for farming
Moderately slow permeability; depth to sandstone bedrock is 3 to 6 feet or more.	Poor to fair stability and compaction characteristics; medium compressibility; fair resistance to piping when mixed.	Moderately well drained; medium runoff.	Slow intake rate; moderate available water capacity; medium runoff.	Practice not applicable; generally regular slopes; natural gradient requires excessive cuts; firm, brittle layer at a depth of 24 inches.
Moderately slow permeability; depth to sandstone bedrock is 3 to 6 feet or more; slopes limit storage potential.	Poor to fair stability and compaction characteristics; medium compressibility; fair resistance to piping when mixed.	Moderately well drained; rapid runoff.	Stoniness; strong slopes; rapid runoff; generally not suitable for crops.	Practice not applicable.
Moderate permeability; depth to sandstone bedrock is 2 to 4 feet.	Fair stability and compaction characteristics; moderate to low permeability; slight to medium compressibility; poor to fair resistance to piping; somewhat limited volume of material.	Well drained	Moderate intake rate; moderate available water capacity.	Practice not applicable; generally regular slopes; natural gradient requires excessive cuts.
Moderate permeability; depth to sandstone bedrock is 2 to 4 feet; slope limits storage potential.	Fair stability and compaction characteristics; moderate to low permeability; slight to medium compressibility; poor to fair resistance to piping; somewhat limited volume of material; many stones and cobbles.	Well drained	Practice not applicable	Practice not applicable.
Moderately slow permeability; seasonal high water table.	Good to poor stability; fair to poor compaction characteristics; moderate permeability when compacted; poor resistance to piping and erosion; subsoil difficult to vegetate on embankments.	Poorly drained; seasonal high water table; moderately slow permeability; ponding on surface.	Moderate to slow intake rate; moderate available water capacity.	Shallow depressions in surface; poorly drained; seasonal high water table; high sodium content in middle part of subsoil limits practical depth of cut.
Moderately rapid permeability; sandstone bedrock within 20 inches of the surface.	Limited volume of material; high content of cobbles and stones; moderate permeability when compacted; poor resistance to piping.	Well drained	Stoniness; gently sloping to steep; rapid runoff; generally not suited to crops; low productivity.	Practice not applicable.
Moderately rapid permeability; seasonal high water table.	Fair to good compaction characteristics; moderate permeability when compacted; poor resistance to piping and erosion.	Somewhat poorly drained; seasonal high water table.	Moderate intake rate; moderate to low available water capacity.	Shallow depressions in surface; somewhat poorly drained; seasonal high water table.
Moderately rapid permeability.	Fair stability and compaction characteristics; moderate permeability when compacted; poor resistance to piping and erosion.	Well drained; subject to frequent flooding.	Moderate intake rate; moderate available water capacity; subject to frequent flooding; not generally suitable for crops.	Shallow depressions in surface; subject to frequent flooding; possibility of scouring; not generally suitable for crops.

TABLE 7.—*Interpretations of*

Soil series and map symbols	Suitability as a source of—		
	Topsoil	Road fill	Sand
Sharkey: Sh	Poor: poorly drained; predominantly plastic, clayey material.	Poor: poorly drained; low traffic-supporting capacity; high shrink-swell potential; plastic, clayey material.	Not suitable: no sand
Staser: St	Good	Fair: moderate traffic-supporting capacity.	Not suitable above a depth of 47 inches; poor below a depth of 47 inches; excessive fines.

TABLE 8.—*Engineering*

[Tests performed by the Arkansas State Highwa

Soil name and location	Parent material	Arkansas SCS report number S-67-Ark-34	Depth from surface	Horizon
			In.	
Amagon silt loam (modal) SE¼SW¼SW¼ sec. 14, T. 14 N., R. 2 W.	Loamy sediment on natural levees.	2-5	28-41	B23t
		2-6	41-60	B24t
Patterson fine sandy loam (modal) NW¼NW¼NE¼ sec. 14, T. 13 N., R. 2 W.	Loamy sediment on natural levees.	3-4	21-41	B22tg
		3-5	41-62	B3g
		3-6	62-72	C

[1] Based on AASHO Designation: T99-70, Method A (*1*).

[2] Mechanical analysis according to the AASHO Designation: T88-70 (*1*). Results of this procedure may differ from results obtained by soil survey procedure of the Soil Conservation Service (SCS). In the AASHO procedure, fine material is analyzed by the hydrometer method, and various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, fine material is analyzed by the pipette method, and the material coarser than 2 millimeters in

engineering properties—Continued

Soil features affecting—				
Pond reservoir areas	Embankments, dikes, and levees	Drainage of cropland and pasture	Irrigation	Land grading and smoothing for farming
Soil features generally favorable; seasonal high water table.	Fair to poor stability and compaction characteristics; high compressibility; high shrink-swell potential; plastic, clayey material.	Poorly drained; seasonal high water table; very slow permeability.	Very slow intake rate; high available water capacity.	Shallow depressions in surface; difficult to grade in wet seasons; poorly drained; seasonal high water table.
Moderate permeability above a depth of 47 inches; moderately rapid permeability below a depth of 47 inches.	Fair to poor stability and compaction characteristics; moderate to low permeability when compacted; medium compressibility; poor resistance to piping and erosion.	Well drained; subject to occasional flooding.	Moderate intake rate; high available water capacity.	Shallow depressions in surface.

test data

Department, Division of Materials and Tests]

Moisture density [1]		Mechanical analysis [2]			Liquid limit	Plasticity index	Classification	
		Percentage passing sieve—						
Maximum dry density	Optimum moisture	No. 10 (2.0 mm.)	No. 40 (0.42 mm.)	No. 200 (0.074 mm.)			AASHO [3]	Unified [4]
Lb./cu. ft.	*Pct.*							
100	22	100	100	93	45	20	A-7-6(14)	CL
93	27	------------	99	96	57	33	A-7-6(32)	CH
122	11	------------	100	40	------------	[5] NP	A-4(1)	SM
117	13	------------	100	28	------------	NP	A-2-4(0)	SM
115	14	------------	100	27	22	4	A-2-4(0)	SM

diameter is excluded from calculation of grain-size fractions. The mechanical analysis data used in this table are not suitable for naming textural soil classes.

[3] Based on AASHO Designation: M 145-66 I (*1*).

[4] Based on Military Standard 619 B (*18*).

[5] Nonplastic.

1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, and A-7-6. As additional refinement, the engineering value of a soil material can be indicated by a group index number. Group indexes range from 0 for the best material to 20 or more for the poorest. The AASHO classification for tested soils, with group index numbers in parentheses, is shown in table 8; the estimated classification, without group index numbers, is given in table 6 for all soils mapped in the survey area.

Estimated engineering properties

Table 6 provides estimates of soil properties important to engineering. The estimates are based on field classification and description, physical and chemical tests of selected representative samples, test data from comparable soils in adjacent areas, and detailed experience in working with soils in the survey area.

USDA texture is determined by the relative proportions of sand, silt, and clay in soil material that is less than 2.0 millimeters in diameter. "Sand," "silt," and "clay," and some of the other terms used in the USDA textural classification are defined in the Glossary.

Liquid limit and plasticity index are discussed under the heading "Engineering Test Data."

Permeability, as used in table 6, relates only to movement of water downward through undisturbed and uncompacted soil. It does not include lateral seepage. The estimates are based on soil characteristics that influence porosity of the soil. Plowpans, surface crusts, and other properties resulting from use of the soils are not considered. Permeability ratings should not be confused with the coefficient "K" used by engineers.

Available water capacity is the capacity of soils to store water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Reaction is the degree of acidity or alkalinity of a soil, expressed as a pH value. The pH value and relative terms used to describe soil reaction are explained in the Glossary.

Shrink-swell potential is an indication of the volume change of the soil material to be expected with changes in moisture content. Shrinking and swelling of soil cause much damage to building foundations, roads, and other structures. A high shrink-swell potential indicates hazards to the maintenance of structures constructed in, on, or with such materials.

Corrosivity, as used here, indicates the potential danger to uncoated steel or concrete structures through chemical action that dissolves or weakens the structural material. Structural materials may corrode when buried in soil, and a given material corrodes in some kinds of soil more rapidly than in others. Extensive installations that intersect soil boundaries or soil horizons are more likely to be damaged by corrosion than are installations entirely in one kind of soil or soil horizon.

Interpretation of engineering properties

Table 7 contains selected information useful to engineers and others who plan to construct highways, farm facilities, and structures to control water and conserve soil. Detrimental or undesirable features are emphasized, but very important desirable features are also listed. The ratings and other interpretations in this table are based on estimated engineering properties of the soil in table 6; on available test data, including those in table 8; and on field experience. While the information strictly applies only to soil depths indicated in table 6, it is reasonably reliable to depths of about 6 feet.

The southwestern part of the county is an area of hilly uplands, where the soils are underlain by shale or hard, massive sandstone bedrock. The depth to bedrock is 1.5 to 4 feet throughout most of this area, but ranges from less than 1 foot to more than 6 feet. It is a severe limitation in designing and constructing engineering works. In the rest of the county, bedrock is many feet deep beneath alluvial sediment and is not a factor to be considered in planning construction. In the eastern lowlands bedrock is many feet, perhaps hundreds of feet, below the surface.

In table 7, the soils are not rated according to their suitability as a source of gravel. Deposits of gravel suitable for surfacing roads are in the vicinity of Olyphant. They are included with delineations of Dexter and Enders soils on the map at the back of this publication. These deposits are erratically distributed. Some have been mined, and the pits are filled with water most of the year. Others are active mines. These deposits are not suitable for aggregate without washing and screening. Sand and gravel suitable for aggregate are dredged from the channel of the White River.

Topsoil, included in table 7, is soil material that can be spread over bare surfaces, lawns, and gardens to improve soil and to establish or maintain adapted vegetation.

Road fill is the material used to build embankments to support the subbase and base course or surface course of a road. The ratings indicate performance of soil material moved from borrow areas for these purposes.

Sand ratings are based on the probability that delineated areas of the soil contain deposits of sand. The ratings provide guidance about where to look for sand, but do not indicate quality or size of the deposits.

Pond reservoir areas are affected mainly by seepage loss of water, and the soil features are those that influence such seepage.

Embankments, dikes, and levees are low structures designed to impound or divert water. The soil features of both subsoil and substratum are important to the use of soil for embankments, dikes, and levees.

Drainage of cropland and pasture is essential to the efficient and economical use of many of the soils that have restricted natural drainage. The soil features considered are those that affect the installation and performance of drainage works.

Irrigation during part of the growing season is beneficial to many of the commonly grown crops and is essential in rice culture. Among the soil features considered are available water capacity, intake rate, runoff, and slope.

Land grading and smoothing reshapes the land surface by removing knolls, mounds, and ridges and by filling swales, potholes, and gullies. Precision land grading is required for the efficient management of water (fig. 16). It insures the uniform spread of irrigation water and improves surface drainage. The soil features considered

Figure 16.—**A precision-graded field of Forestdale silty clay loam immediately after a period of intense rainfall.**

are those that affect the reshaping of the land surface, such as the water table, natural drainage, susceptibility to flooding, and restrictive or toxic layers in the soil. Careful preliminary investigation to determine the depth to layers high in sodium is required when the Calhoun, Foley, Hilleman, Lafe, and McCrory soils are graded. The design must provide for a sufficient rooting zone above the high sodium layers to prevent detrimental effects to crop plants.

Soil features that affect suitability of the soils for terraces are not shown in table 7. Terracing is not a suitable water control measure for most of the soils in the county. On lowlands, the slopes are short and irregular. On uplands, many slopes are too steep, or the soils are too stony or shallow, for proper construction of terraces. Runoff from such areas can best be controlled by vegetation.

Leadvale silt loam and Linker fine sandy loam have slopes of less than 8 percent. On these soils, soil features are generally favorable for constructing terraces. Terraces can be constructed on Enders silt loams that have slopes of less than 8 percent, but construction and maintenance are difficult.

Additional interpretations of engineering uses of soils are given in the section "Use of the Soils in Town and Country Planning."

Engineering test data

Table 8 contains the results of engineering tests performed by the Arkansas State Highway Department on two important soils in Jackson County. It shows the specific location where samples were taken, the depth to which sampling was done, and the results of tests to determine particle-size distribution and other properties significant in soil engineering.

Maximum dry density is the maximum dry unit weight of the soil when it has been compacted with optimum moisture by the prescribed method of compaction. The moisture content that gives the highest dry unit weight is called the optimum moisture content for the specific method of compaction.

Mechanical analyses show the percentages, by weight, of soil particles that pass sieves of specified sizes. Sand and other coarser materials do not pass through the No. 200 sieve. Silt and clay pass through the No. 200 sieve. Silt is the material larger than 0.002 millimeter in diameter that passes through the No. 200 sieve, and clay is that fraction passing through the No. 200 sieve that is smaller than 0.002 millimeter in diameter.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of soil material. As the moisture content of a clayey soil increases from a dry state, the material changes from a solid to a plastic. If the moisture content increases further, the material changes from a plastic to a liquid. The plastic limit is the moisture content at which the material changes from solid to plastic. The liquid limit is the moisture content at which the material changes from plastic to liquid. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a material is plastic.

The AASHO and Unified soil classification systems have been explained earlier in this section.

Use of the Soils in Town and Country Planning

Table 9 gives the degree and kind of limitations of the soils of Jackson County for stated uses in town and country planning. The degrees of limitation refer to all the features of the given soil, to a depth of 6 feet, that affect a particular use.

Slight limitations mean that the soil has properties favorable to the stated use. Limitations are so minor that they can be easily overcome. Good performance and low maintenance can be expected from these soils. *Moderate* limitations mean that the soil has properties moderately favorable to the stated use. Limitations can be overcome or modified with planning, design, or special maintenance. *Severe* limitations mean that the soil has one or more properties unfavorable to the stated use. Limitations are difficult and costly to modify or overcome, requiring major soil reclamation, special design, or intense maintenance.

Properties considered in evaluating limitations to the uses listed in table 9 are explained in the paragraphs that follow.

Dwellings.—Ratings evaluate an undisturbed soil for one-family dwellings of three stories or less that have no basements. Foundation requirements are emphasized, but slope, susceptibility to flooding, and seasonal wetness are also considered.

Properties that affect the foundation support are those that affect bearing strength, settlement under load, and excavation and construction cost. The properties affecting bearing strength and settlement of the natural soil are density, wetness, flooding, plasticity, texture, and shrink-swell potential. Specific values should not be applied to the rating of bearing strength in this table. Shrink-swell potential refers to expansion and contraction of the soil with changes in moisture content. Properties affecting the ease and amount of excavation are wetness, slope, depth to bedrock, and stoniness. Also considered are soil properties, particularly depth of bedrock, that influence installation of utility lines, such as those between dwellings and trunk lines. Excluded are soil limitations for sewage disposal, and for soil corrosivity to steel and concrete. Such limitations are provided in separate interpretations.

Septic tank absorption fields.—Ratings in this column are for soil areas used for absorption of effluent from septic tanks. A subsurface tile system is laid in such a way that effluent is distributed with reasonable uniformity into the natural soil. Properties considered are permeability, depth to a water table, depth to bedrock, and flood hazard. A permeability rate slower than 0.60 of an inch per hour constitutes a severe limitation, and a permeability rate between 0.60 and 1 inch per hour, a moderate limitation. A seasonal water table, bedrock, or other impervious material less than 4 feet below the bottom of the tile trench constitutes a severe limitation, and between 4 and 6 feet constitutes a moderate limitation. Soils subject to flooding have a severe limitation.

Sewage lagoons.—These are shallow lakes used to hold sewage during bacterial decomposition. Properties considered are permeability, slope, depth to a water table or bedrock, and suitability of the reservoir site material for the dam. Permeability over 2 inches per hour is a severe limitation, and from 0.60 to 2 inches per hour is a moderate limitation. A slope steeper than 7 percent is a severe limitation, and from 2 to 7 percent, a moderate limitation. A seasonal water table or bedrock within 40 inches of the soil surface is a severe limitation, and between 40 and 60 inches, a moderate limitation. Requirements for the dam are the same as for other embankments given in table 7.

Sanitary landfill.—The trench-type sanitary landfill is a dug trench in which refuse is buried. The refuse is covered with at least a 6-inch layer of compacted soil material daily. Soil material excavated in digging the trench is used for this purpose. A final cover of soil material at least 2 feet thick is placed on the landfill when the trench is full.

Soil surveys are not a substitute for detailed geologic investigations because soil borings are normally limited to depths of 5 or 6 feet. Thus they do not provide data on deeper soils. Soil surveys are especially useful in preliminary determinations of those sites that are not well suited for landfills, thus saving the time and expense of more detailed investigations. They can also indicate sites where favorable soils are located and where additional investigation appears warranted. Important soil properties are soil drainage and hazard of flooding, depth to a seasonal high water table or bedrock, soil texture, and slope.

Soils that are subject to flooding and have a seasonal high water table or bedrock within 6 feet of the surface or permeability faster than 2 inches per hour have severe limitations. Poor drainage is a severe limitation, and somewhat poor drainage is a moderate limitation. A slope of more than 25 percent is a severe limitation, and a slope of 15 to 25 percent is a moderate limitation. Clayey texture is a severe limitation, and the more plastic loamy texture generally is a moderate limitation.

For information about use of the soils for area-type sanitary landfills, contact the local Soil Conservation Service office.

Local roads and streets.—Properties that affect design and construction of roads and streets also affect stability, traffic-supporting capacity, workability, and the amount of cut and fill. Engineering classifications and shrink-swell potential indicate the traffic-supporting capacity of a soil. Wetness and flooding affect stability. Slope, depth to bedrock, stoniness, and wetness affect ease of excavation and the amount of cut and fill needed to reach an even grade.

Light industry.—Considered in this column are structures of less than three stories and requirements similar to those for dwellings, except that slope is more critical. Generally, slopes steeper than 8 percent are a severe limitation, and slopes of 4 to 8 percent are a moderate limitation.

Recreational facilities.—Considered in this column are soil areas used for camping, picnicking, or intensive play. Trafficability, permeability, and topography are important soil properties. Trafficability depends on surface soil texture and the amount and size of coarse fragments on the soil surface. It refers to pedestrian movement and bicycle and light vehicular traffic. Trafficability is no more than slightly limited on loamy soils that are not likely to be flooded and have a water table below a depth of 30 inches during the season of heavy use. On clayey soils and soils that have a large amount of coarse fragments on the surface, trafficability is severely limited.

The detailed soil map and information in table 9 are guides for evaluating areas for specific uses. They do not eliminate the need for detailed onsite investigations before a final determination is made.

Additional information that may be useful in town and country planning is given in the section "Use of the Soils in Engineering."

Formation and Classification of the Soils

In this section the factors that affect soil formation and horizon differentiation in Jackson County are discussed. The current system of soil classification is explained, and the soil series are placed in some higher categories of that system. A profile representative of each series is given in the section "Descriptions of the Soils."

Factors of Soil Formation

Soil is formed by weathering and other processes that act upon the soil. The characteristics of the soil at any given point depend on climate, living organisms, parent material, relief, and time. Each factor acts on the soil and modifies the effect of the other four. When one of the five factors varies to a significant extent, a different soil may be formed (*11*).

Climate and living organisms are the active factors of soil formation. Relief modifies the effects of these active factors, mainly by its influence on temperature and runoff. Because climate, living organisms, parent material, and relief interact over a period of time, time is the fifth factor of soil formation.

The interaction of the five factors of soil formation is more complex for some soils than for others. The five factors and how they interact to form some of the soils in Jackson County are discussed in the following paragraphs.

Climate

The climate of Jackson County is characterized by mild winters, warm or hot summers, and generally abundant rainfall. The generally warm temperatures and high precipitation probably are similar to the climate under which the local soils formed. The average daily maximum temperature at Newport in July is about 93 degrees, and in January is about 50 degrees. The total annual rainfall is about 50 inches and is well distributed throughout the year. For additional information about the climate, refer to the section "General Nature of the County."

The warm, moist climate promotes rapid soil formation, and the warm temperature encourages rapid chemical reactions. The large amount of water that moves through the soil is instrumental in removing dissolved or suspended materials. Because plant remains decompose rapidly, organic acids thus formed hasten the formation of clay minerals and the removal of carbonates. Because the soil is frozen only to shallow depths and for short periods, soil formation continues almost the year round. The climate throughout Jackson County is uniform, though its effect is modified locally by runoff. Climate alone does not account for differences among county soils.

Living organisms

The higher plants and animals, as well as insects, bacteria, and fungi, are important in soil formation. Among the changes they cause are gains in organic matter and nitrogen in the soil, gains or losses in plant nutrients, and changes in structure and porosity.

Before Jackson County was settled, native vegetation had more influence on soil formation than did animal activity. Hardwood forests, broken by swamps and a few canebrakes, covered all the lowland part of the county. The upland part of the county had hardwoods or mixed pines and hardwoods on the deeper soils, and savannas of scattered hardwood with an understory of tall grasses on the shallower soils.

Stands of chiefly baldcypress and water tupelo filled the swampy areas where Sharkey and some Forestdale soils formed, whereas less water-tolerant hardwoods covered most Beulah, Dexter, Dundee, Egam, and Staser soils. Bosket soils formed where there was a dense canebrake understory. Trees growing at higher elevations were chiefly hickory, pecan, white oak, red oak, and blackgum. In swales and level areas that were wet but not swampy, most of the trees were sweetgum, soft elm, green ash, hackberry, cottonwood, overcup oak, cow oak, winter oak, and willow oak. Here such soils as Amagon, Calhoun, Crowley, Forestdale, Foley, Jackport, and Patterson formed.

On the uplands the moderately deep soils, such as Leadvale, Linker, and Enders formed under stands of mainly red oaks and white oaks, mixed with shortleaf pine in some parts of the area. Where bedrock is at a shallow depth, Mountainburg and Hector soils formed under a cover of scattered post oak and blackjack oak and an understory of tall grasses, such as big bluestem, little bluestem, and indiangrass.

The differences in native vegetation on the uplands seem to be related mainly to variations in the available water capacity of the soils, whereas on the lowlands the differences seem to be related mainly to variations in drainage. Only the major differences in the original vegetation are reflected to any extent by the characteristics of the soils.

Man is most important to the future rate and direction of soil formation. He clears forests, cultivates soil, and introduces new plants. He adds fertilizer and lime and chemicals for insect, disease, and weed control. He builds levees for flood control, improves drainage, and grades the soil surface. Some results of these changes will not be evident for many centuries. Nevertheless, the complex of living organisms affecting soil formation in this county has been drastically changed by man.

Parent material

Jackson County lies astride the boundary between Paleozoic rock to the west and broad areas of alluvium derived from the southern part of the Mississippi River and the silty uplands of the Mississippi River Valley to the east. Consequently, Jackson County soils formed in parent materials of considerable variety.

To the west, the soils formed in material weathered in place from interbedded acid sandstone, siltstone, and shale of the Pennsylvania System of the Paleozoic epoch, or in sediments washed from this source.

TABLE 9.—*Degree and kind of limitation for*

[An asterisk in the first column indicates that at least one mapping unit is made up of two or more kinds of soil, which may have different another

Soil series and map symbols	Dwellings without basements	Septic tank absorption fields	Sewage lagoons [1]	Sanitary land fill, trench type
*Amagon: Af For Forestdale part, see Forestdale series.	Severe: poorly drained; seasonal high water table; low bearing strength.	Severe: slow permeability; seasonal high water table.	Slight	Severe: seasonal high water table; poorly drained.
Beulah: BeU	Slight	Slight	Severe: moderately rapid permeability.	Severe: moderately rapid permeability.
Bosket: BoA, BoU	Slight	Slight	Moderate: moderate permeability.	Severe: moderately rapid permeability below a depth of 50 inches. Slight where layer below a depth of 50 inches is fine sandy loam.
Calhoun Mapped only in a complex with Foley soils.	Severe: poorly drained; seasonal high water table; low bearing strength.	Severe: slow permeability; seasonal high water table.	Slight to moderate: good to fair reservoir site material.	Severe: poorly drained; seasonal high water table.
*Crowley: Co, Cr For Hillemann part, see Hillemann series.	Severe: poorly drained; seasonal high water table; low bearing strength; high shrink-swell potential.	Severe: very slow permeability; seasonal high water table.	Slight	Severe: poorly drained; seasonal high water table.
Dexter: De, DeU	Moderate: moderate bearing strength; low to moderate shrink-swell potential.	Slight: moderate permeability.	Moderate: moderate permeability; fair to good reservoir site material.	Slight
Dundee: DvA, DvU	Moderate: somewhat poorly drained; seasonal high water table; moderate bearing strength.	Severe: moderately slow permeability; seasonal high water table.	Slight	Severe: seasonal high water table.
Egam: Eg	Severe: occasional flooding; moderate to low bearing strength.	Severe: occasional flooding; moderately slow permeability.	Severe: occasional flooding.	Severe: occasional flooding.
Enders:				
EnD	Severe: high shrink-swell potential; low bearing strength; subject to sliding.	Severe: very slow permeability; 40 to 60 inches to bedrock.	Moderate if slope is less than 7 percent, severe if more than 7 percent; 40 to 60 inches to bedrock.	Severe: 40 to 60 inches to rippable bedrock; clayey texture.
EsE	Severe: slopes; high shrink-swell potential; low bearing strength; subject to sliding.	Severe: very slow permeability; 40 to 60 inches to bedrock.	Severe: slope	Severe: slope; 40 to 60 inches to rippable bedrock; clayey texture.

See footnote at end of table.

stated uses in town and country planning

properties and limitations. For this reason the reader should follow carefully the instructions in the first column of this table for referring to series]

Local roads and streets	Light industry	Recreational facilities: Campsites	Recreational facilities: Picnic areas	Recreational facilities: Intensive play areas
Severe: poorly drained; low traffic-supporting capacity.	Severe: poorly drained; seasonal high water table; low bearing strength.	Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table.
Slight	Ordinarily slight: moderate where slope is more than 4 percent.	Slight	Slight	Slight if slope is less than 2 percent, moderate if slope is 2 to 6 percent, severe if more than 6 percent.
Slight	Slight	Slight	Slight	Slight if slope is less than 2 percent, moderate if more than 2 percent.
Severe: poorly drained; seasonal high water table; low traffic-supporting capacity.	Severe: poorly drained; seasonal high water table; low bearing strength.	Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table.
Severe: poorly drained; seasonal high water table; low traffic supporting capacity; high shrink-swell potential.	Severe: poorly drained; seasonal high water table; low bearing strength; high shrink-swell potential.	Severe: poorly drained; seasonal high water table; very slow permeability.	Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table; very slow permeability.
Moderate: moderate traffic-supporting capacity; low to moderate shrink-swell potential.	Moderate: moderate bearing strength; low to moderate shrink-swell potential.	Slight	Slight	Slight if slope is less than 2 percent, moderate if more than 2 percent.
Moderate to severe: somewhat poorly drained; moderate to low traffic-supporting capacity; moderate shrink-swell potential.	Moderate: somewhat poorly drained; seasonal high water table; moderate bearing strength.	Moderate: somewhat poorly drained; moderately slow permeability.	Moderate: somewhat poorly drained.	Moderate: somewhat poorly drained; moderately slow permeability; some slopes exceed 2 percent.
Severe: occasional flooding; moderate to low traffic-supporting capacity; moderate shrink-swell potential.	Severe: occasional flooding; moderate to low bearing strength.	Moderate: occasional flooding.	Slight	Moderate: occasional flooding during season of use; moderately slow permeability.
Severe: low traffic-supporting capacity; high shrink-swell potential; subject to sliding; 40 to 60 inches to rippable bedrock.	Severe: low bearing strength; high shrink-swell potential; slope; 40 to 60 inches to rippable bedrock.	Severe: very slow permeability.	Slight: moderate if slope exceeds 8 percent.	Severe: very slow permeability; some slopes exceed 6 percent.
Severe: low traffic-supporting capacity; high shrink-swell potential; subject to sliding; slope; 40 to 60 inches to rippable bedrock.	Severe: low bearing strength; high shrink-swell potential; slope; 40 to 60 inches to rippable bedrock.	Severe: very slow permeability; most slopes exceed 15 percent; coarse fragments on surface.	Moderate if slope is less than 15 percent, severe if slope is more than 15 percent; coarse fragments on surface.	Severe: very slow permeability; slopes exceed 6 percent; coarse fragments on surface.

TABLE 9.—*Degree and kind of limitation for*

Soil series and map symbols	Dwellings without basements	Septic tank absorption fields	Sewage lagoons [1]	Sanitary land fill, trench type
*Foley: Fc, Fm. For Calhoun part, see Calhoun series; for McCrory part, see McCrory series.	Severe: poorly drained; seasonal high water table; moderate to low bearing strength.	Severe: slow permeability; seasonal high water table.	Slight	Severe: poorly drained; seasonal high water table.
Forestdale: Fo	Severe: poorly drained; seasonal high water table; low bearing strength; high shrink-swell potential.	Severe: very slow permeability; seasonal high water table.	Slight	Severe: poorly drained; seasonal high water table; clayey material.
Grubbs: Gb	Severe: seasonal high water table; low bearing strength; high shrink-swell potential.	Severe: very slow permeability; seasonal high water table.	Slight	Severe: seasonal high water table; clayey material.
Hector. Mapped only in a complex with Linker soils.	Severe: shallow to sandstone bedrock.	Severe: shallow to sandstone bedrock.	Severe: shallow to sandstone bedrock.	Severe: shallow to sandstone bedrock.
Hillemann. Mapped only in a complex with Crowley soils.	Severe: seasonal high water table; moderate to low bearing strength.	Severe: slow permeability; seasonal high water table.	Slight	Severe: seasonal high water table.
Jackport: Ja	Severe: seasonal high water table; low bearing strength; high shrink-swell potential.	Severe: very slow permeability; seasonal high water table.	Slight	Severe: seasonal high water table; clayey material.
Lafe: La	Severe: seasonal high water table; moderate to low bearing strength.	Severe: very slow permeability; seasonal high water table.	Slight	Severe: seasonal high water table.
Leadvale: LdB, LdC	Moderate: moderate bearing strength.	Severe: moderately slow permeability; more than 36 inches to bedrock.	Moderate if slope is less than 7 percent, severe if more than 7 percent; more than 36 inches to bedrock.	Severe: more than 36 inches to bedrock.
LeD	Moderate: moderate bearing strength; slopes 3 to 12 percent; stoniness.	Severe: moderately slow permeability; more than 36 inches to bedrock.	Moderate if slope is less than 7 percent, severe if more than 7 percent; more than 36 inches to bedrock.	Severe: more than 36 inches to bedrock.

See footnote at end of table.

stated uses in town and country planning—Continued

Local roads and streets	Light industry	Recreational facilities		
		Campsites	Picnic areas	Intensive play areas
Severe: poorly drained; low traffic-supporting capacity.	Severe: poorly drained; seasonal high water table; moderate to low bearing strength.	Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table.
Severe: poorly drained; low traffic-supporting capacity; high shrink-swell potential.	Severe: poorly drained; seasonal high water table; low bearing strength; high shrink-swell potential.	Severe: poorly drained; seasonal high water table; very slow permeability; poor trafficability.	Severe: poorly drained; seasonal high water table; poor trafficability.	Severe: poorly drained; seasonal high water table; very slow permeability; poor trafficability.
Severe: low traffic-supporting capacity; high shrink-swell potential.	Severe: somewhat poorly drained; low bearing strength; high shrink-swell potential.	Severe: somewhat poorly drained; very slow permeability.	Moderate: somewhat poorly drained.	Severe: somewhat poorly drained; very slow permeability.
Severe: shallow to sandstone bedrock.	Severe: shallow to sandstone bedrock.	Severe: most slopes exceed 15 percent; coarse fragments on surface; somewhat difficult to maintain vegetation.	Severe: most slopes exceed 15 percent; coarse fragments on surface; somewhat difficult to maintain vegetation.	Severe: slopes exceed 6 percent; shallow to sandstone bedrock; coarse fragments on surface.
Moderate to severe: somewhat poorly drained; moderate to low traffic-supporting capacity; moderate shrink-swell potential.	Severe: seasonal high water table; moderate to low bearing strength.	Severe: somewhat poorly drained; seasonal high water table.	Moderate: somewhat poorly drained.	Severe: somewhat poorly drained; seasonal high water table.
Severe: low traffic-supporting capacity; high shrink-swell potential.	Severe: somewhat poorly drained, with surface ponding; low bearing strength; high shrink-swell potential.	Severe: somewhat poorly drained; seasonal high water table; very slow permeability; poor trafficability.	Severe: somewhat poorly drained; seasonal high water table; poor trafficability.	Severe: somewhat poorly drained; seasonal high water table; very slow permeability; poor trafficability.
Severe: low traffic-supporting capacity; high sodium content; difficult to stabilize.	Severe: seasonal high water table; moderate to low bearing strength.	Severe: somewhat poorly drained; seasonal high water table; very slow permeability; vegetation very difficult to establish and to maintain.	Severe: somewhat poorly drained; seasonal high water table; vegetation very difficult to establish and to maintain.	Severe: somewhat poorly drained; seasonal high water table; very slow permeability; vegetation very difficult to establish and to maintain.
Moderate: moderate traffic-supporting capacity.	Moderate: moderate bearing strength; slope of unit LdC exceeds 4 percent.	Moderate: moderately well drained; moderately slow permeability.	Slight	Moderate: moderately slow permeability; slope; severe if slope is more than 6 percent.
Moderate: moderate traffic-supporting capacity; some slopes exceed 8 percent.	Moderate: moderate bearing strength; stoniness; severe if slope is more than 8 percent.	Moderate: moderately well drained; moderately slow permeability; coarse fragments on surface; slope.	Slight: moderate if slope is more than 8 percent.	Severe: moderately slow permeability: some slopes exceed 6 percent; coarse fragments on surface.

TABLE 9.—*Degree and kind of limitation for*

Soil series and map symbols	Dwellings without basements	Septic tank absorption fields	Sewage lagoons [1]	Sanitary land fill, trench type
*Linker:				
LfC	Moderate: 24 to 48 inches to sandstone bedrock; moderate bearing strength.	Severe: 24 to 48 inches to sandstone bedrock.	Severe: 24 to 48 inches to sandstone bedrock.	Severe: 24 to 48 inches to sandstone bedrock.
LhF. For Hector part, see Hector series.	Severe: 24 to 48 inches to sandstone bedrock; slopes 12 to 40 percent.	Severe: 24 to 48 inches to sandstone bedrock; slopes 12 to 40 percent.	Severe: 24 to 48 inches to sandstone bedrock; slopes 12 to 40 percent.	Severe: 24 to 48 inches to sandstone bedrock; some slopes exceed 25 percent.
McCrory. Mapped only in a complex with Foley soils.	Severe: poorly drained; seasonal high water table.	Severe: moderately slow permeability; seasonal high water table.	Slight to moderate: good to fair reservoir site material.	Severe: poorly drained; seasonal high water table.
Mountainburg: MoD	Severe: less than 20 inches to sandstone bedrock.	Severe: less than 20 inches to sandstone bedrock.	Severe: less than 20 inches to sandstone bedrock.	Severe: less than 20 inches to sandstone bedrock.
Patterson: Pa	Moderate: somewhat poorly drained; seasonal high water table.	Severe: seasonal high water table.	Severe: seasonal high water table; moderately rapid permeability.	Severe: seasonal high water table; moderately rapid permeability.
Sequatchie: Se	Severe: frequent flooding.	Severe: frequent flooding.	Severe: frequent flooding; moderately rapid permeability.	Severe: frequent flooding; moderately rapid permeability.
Sharkey: Sh	Severe: poorly drained; seasonal high water table; low bearing strength; high shrink-swell potential; occasional flooding.	Severe: very slow permeability; seasonal high water table; occasional flooding.	Severe: seasonal high water table; occasional flooding.	Severe: seasonal high water table; clayey material; occasional flooding.
Staser: St	Severe: occasional flooding; moderate bearing strength.	Severe: occasional flooding.	Severe: occasional flooding; moderate permeability.	Severe: occasional flooding.

[1] For information about material for lagoon embankments, see table 7, p. 48, column "Embankments, dikes, and levees."

stated uses in town and country planning—Continued

Local roads and streets	Light industry	Recreational facilities		
		Campsites	Picnic areas	Intensive play areas
Moderate: 24 to 48 inches to sandstone bedrock.	Moderate to severe: slopes 3 to 8 percent; 24 to 48 inches to sandstone bedrock.	Slight	Slight	Moderate if slope is less than 6 percent, severe if more than 6 percent; 24 to 48 inches to sandstone bedrock.
Severe: 24 to 48 inches to sandstone bedrock; slopes 12 to 40 percent.	Severe: 24 to 48 inches to sandstone bedrock; slopes 12 to 40 percent.	Severe: most slopes exceed 15 percent; coarse fragments on surface.	Severe: most slopes exceed 15 percent; coarse fragments on surface.	Severe: slope exceeds 6 percent; 24 to 48 inches to bedrock; coarse fragments on surface.
Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table.	Severe: poorly drained; seasonal high water table.
Severe: less than 20 inches to sandstone bedrock.	Severe: less than 20 inches to sandstone bedrock.	Moderate if slope is less than 15 percent, severe if more than 15 percent; coarse fragments on surface; somewhat difficult to maintain vegetation.	Moderate if slope is less than 15 percent, severe if more than 15 percent; coarse fragments on surface; somewhat difficult to maintain vegetation.	Severe: most slopes exceed 6 percent; coarse fragments on surface.
Moderate: somewhat poorly drained; seasonal high water table.	Moderate: somewhat poorly drained; seasonal high water table.	Moderate: somewhat poorly drained.	Moderate: somewhat poorly drained.	Severe: somewhat poorly drained; seasonal high water table.
Severe: frequent flooding.	Severe: frequent flooding.	Severe: frequent flooding.	Moderate: flooding during season of use.	Severe: frequent flooding.
Severe: poorly drained; seasonal high water table; low traffic-supporting capacity; high shrink-swell potential.	Severe: poorly drained; seasonal high water table; low bearing strength; high shrink-swell potential; occasional flooding.	Severe: poorly drained; seasonal high water table; very slow permeability; poor trafficability.	Severe: poorly drained; seasonal high water table; poor trafficability.	Severe: poorly drained; seasonal high water table; occasional flooding; very slow permeability; poor trafficability.
Moderate: occasional flooding; moderate traffic-supporting capacity.	Severe: occasional flooding; moderate bearing strength.	Moderate: occasional flooding.	Slight	Moderate: occasional flooding.

The sandstone is more resistant to weathering than the other rocks and forms a cap rock on the low hills. The hilltops are smooth and are probably remnants of a plateau, and major local relief is the result of geological erosion. The hills appear much like a miniature of the Boston Mountains a few miles to the northwest. On the hilltops siltstone and sandstone rocks have weathered to parent material in which Leadvale, Linker, and Mountainburg soils formed. Leadvale soils formed in material high in content of silt. Apparently siltstone is less resistant to weathering than standstone, because typical Leadvale soils are about 1½ feet deeper to bedrock than Linker soils.

Linker soils as well as Mountainburg soils formed in material high in content of sand. Linker soils are deeper to bedrock than the shallow Mountainburg soils, but these soils are much alike in kind and sequence of horizons. This suggests that either the rock beneath Mountainburg soils is somewhat more resistant to weathering than that under Linker soils or that erosion has more nearly kept pace with weathering.

On hillsides, water has cut through interbedded sandstone and shale and has left alternating slopes of shale and benches of sandstone. Linker, Mountainburg, and Hector soils formed on these benches. Hector soils average a few inches shallower to bedrock than Mountainburg soils, and lack argillic horizons. Because these two soils are adjacent and on the same kind of bedrock, Hector soils must have eroded more rapidly, and the parent material weathered from rock in too short a time for an argillic horizon to form. On the slopes where shale was exposed, Enders soils formed. Their B2, B3, and C horizons formed in material weathered from shale, whereas their A and B1 horizons formed in colluvium that washed and rolled down from higher lying benches.

In valleys, stream terraces are parent material for Leadvale soils, and Sequatchie soils formed in young local alluvium on stream flood plains.

Most soils of the county formed in mixed sediment deposited by large rivers. Within the alluvial area of Jackson County a wide range in texture of the sediments is related to differences in the site of deposition. As a river overflows its banks and spreads out over a flood plain, the coarser sediment drops first. Thus sand is commonly deposited in bands parallel to and near the channel. The low ridges thus formed are known as natural levees (*20*). Beulah and Bosket soils are the main soils in these areas. As the floodwaters continue to spread, the finer sediment, such as silt, is deposited next. It is usually mixed with some sand and clay. Dundee and Amagon soils formed in this sediment of intermediate texture. When the flood has passed and water is left standing as shallow lakes or swamps in the lowest part of the flood plain, the finest sediment, clay, settles out. Jackport and Sharkey soils formed in these thick beds of clay.

During much of the Pleistocene time, the Mississippi River flood plain was between Crowley Ridge to the east and the Paleozoic plateaus to the west (*5*). The river meandered about on this flood plain, creating wide expanses of back swamps, and building its natural levees. The alluvium deposited from this former channel of the Mississippi River has come from a multitude of soils, rocks, and unconsolidated sediments throughout its basin, which reaches from Montana to Pennsylvania (*20*). The alluvium, therefore, consists of a mixture of many kinds of minerals. The flood plains of the White and Black Rivers are superimposed on a flood plain that the Mississippi River occupied before it breached Crowley Ridge where the St. Francis River now flows.

Finally, the Mississippi River abandoned the vast complex of alluvial terraces that form much of Jackson and some adjacent counties in favor of channels to the east. The broad, abandoned back swamps were subsequently drained by smaller, more localized streams, such as Cache River, Bayou DeView, and Village Creek. Such streams were inadequate to maintain broad areas as active flood plains. Those parts of the alluvial plain above overflow were gradually mantled with loess that thickens to the east. It was probably laid down at the same time as that on Crowley Ridge. Where the loess is thickest in Jackson County, Calhoun, Lafe, and some Foley soils formed. Where it is thinner over the back swamp clays, Grubbs, Crowley, and Hillemann soils formed. Where there are lenses in the thinnest loess deposits, broad clayey flats were the parent material of Jackport soils. Within the broad area of these dominant soils, there are remnants of old natural levees. Amagon and Forestdale soils are intermingled on the lower parts of these levees, and Dexter soils formed on the higher lying parts.

West of the flats is a natural levee laid down by the Mississippi River. The higher part of the levee is stratified loamy sediment in which somewhat excessively drained or well-drained Beulah, Bosket, and Dexter soils formed. On the lower part, where finer textured sediment was laid down, poorly drained Amagon and Forestdale soils formed. Dundee soils formed at intermediate elevations and are somewhat poorly drained. They formed in sediment similar to that in which Amagon and Dexter soils formed, and the differences among these soils are the result of more relief than of any other soil-forming factor.

The Black River apparently carries too little sediment to effectively maintain young soil in its flood plain, a part of the bed of a former Mississippi River. Thus the soils have continued to form mainly in older loamy sediment and are mainly of the Dundee and Amagon series. The White River, in contrast, has brought down much fresh sediment from the Paleozoic uplands of western Arkansas and southern Missouri, and is actively building a system of natural levees and back swamps. The soils on the White River flood plain are relatively young. They have been in place too short a time for much leaching to have taken place, and are recharged with cations by frequent floods that come from limestone uplands. These conditions are reflected in Egam and Staser soils on the White River natural levees. Both soils are predominantly neutral in reaction, and the Staser soils lack a B horizon. The Egam soils have cambic horizons, but have been in place too short a time to have formed argillic horizons. In the back swamps are Sharkey soils, which have cambic horizons but are typically neutral in reaction.

Relief

Relief, or the inequality in elevation, was brought about in Jackson County by uplift of the Paleozoic rocks and subsequent entrenchment of drainage channels into the land surface and is evident in the escarpment and associated hills where the Atoka Formation joins the alluvial area of the county. The highest elevation in the county, about 820 feet above sea level, is in the hilly up-

lands of the extreme western part. The lowest elevation, about 195 feet above sea level, is only a few miles away, where the White River leaves the county.

Some of the greatest differences in the soils of Jackson County are caused by the effect of relief on drainage, runoff, erosion, and percolation of water through the soil. Differences in relief range from nearly vertical bluffs to broad flats.

The steeper slopes of the hilly uplands have lost so much soil material through geologic erosion that the soils on them are shallow or only moderately deep to bedrock. The shallow Hector and Mountainburg soils formed where relief is probably the dominating factor in soil formation. Leadvale, Linker, and Enders soils are deeper because they are not so steep, and weathering and soil formation have more than kept pace with geologic erosion.

Broad flats broken by higher lying level and undulating natural levees occupy most of the land area of the county. On the flats the lack of significant slope results in water being ponded or draining away very slowly. As a consequence, the soils show evidence of gleying, and B horizons are prominent because more water must percolate through the soil than on soils where relief promotes drainage. Thus Amagon soils, formed on the flats, are strongly gleyed and show much evidence of clay translocation as well as the reduction and transfer of iron. Dexter soils, in contrast, are on convex natural levees. Because excess water drains away, the soil is well drained internally, and there is no evidence of gleying in the profile.

Time

The length of time required for soil formation depends largely on other factors of soil formation. Less time is usually required if the climate is warm and humid and the vegetation luxuriant. If other factors are equal, less time is also required when the parent material is loamy than when it is clayey.

In terms of geological time, most of the soils of Jackson County are young. It seems probable that the sediment now forming the surface of the lowlands in the county was deposited during and after the advance of the continental glaciers. The last of these glaciers retreated from the North Central States about 11,000 years ago (*7, 8*).

The soils on flood plains still receive fresh deposits of sediment, and the soils in these areas are recharged with cations by floods or seep water. Egam and Staser soils, for example, are on young natural levees within the flood plain of the White River. They have a high content of cations and lack evidence of clay translocations. Staser soils also lack B horizons.

In contrast, the older, loamy natural levees are the site of soils such as Bosket and Dexter. These have been in place long enough for significant leaching to take place. Thus, Bosket and Dexter soils are more acid, have lower base saturation, and have formed argillic horizons, which Egam and Staser soils lack.

The soils on uplands formed in material weathered from rocks of the Atoka Formation of Pennsylvanian age (*3*). Most of the soils are old. Most of the cations have been leached out, the reaction is strongly acid or very strongly acid, there has been considerable weathering and translocation of clay, and the horizons are clearly expressed. Iron as well as clay has been translocated from the A horizon to the B horizon and then oxidized, causing the B horizon to have stronger red, brown, and yellow colors than the A horizon. Enders, Leadvale, and Linker soils clearly show the impact of time acting with other soil-forming factors on parent material.

Processes of Soil Formation

This subsection gives a brief definition of horizon nomenclature and processes responsible for soil formation.

The marks that soil-forming factors leave on the soil are recorded in the soil profile, which is a succession of layers, or horizons, from the surface to parent rock. The horizons differ in one or more properties, such as color, texture, structure, consistence, and porosity.

Most soil profiles contain three major horizons, called A, B, and C. Very young soils do not have a B horizon.

The A horizon may be subdivided into the horizon of maximum accumulation of organic matter, called the A1 horizon or the surface layer, and the horizon of maximum leaching of dissolved or suspended materials, called the A2 horizon, or subsurface layer.

The B horizon lies immediately beneath the A horizon and is sometimes called the subsoil. It is the horizon of maximum accumulation of suspended materials, such as clay and iron. Commonly, the B horizon has blocky structure and is firmer than horizons immediately above and below it (*19*).

Beneath the B is the C horizon, which is little affected by the soil-forming processes, though the C horizon can be materially modified by weathering. In some young soils the C horizon immediately underlies the A horizon and has been slightly modified by living organisms, as well as by weathering.

Several processes have been active in the formation of soil horizons in Jackson County. Among these processes are: (1) the accumulation of organic matter, (2) the leaching of bases, (3) the oxidation, or reduction, and transfer of iron, and (4) the formation and translocation of silicate clay minerals. In most of the soils of the county, more than one of these processes have been active in soil formation.

Weathering of rocks through heating and cooling and through wetting and drying slowly breaks them into small pieces that form parent material for residual soils in the county. This is most evident in Hector, Linker, and Mountainburg soils.

Accumulation of organic matter in the upper part of the profile to form an A1 horizon has been an important process of soil formation. The A1 horizon is readily evident in profiles that have lighter colored subsurface layers from which organic matter, clay, and iron oxides have been removed. In Calhoun and Linker soils the effects of these processes are readily evident.

Leaching of bases has occurred to some degree in nearly all the soils of Jackson County. Among soil scientists, it is generally accepted that bases are leached downward in soils before silicate clay minerals begin to move. Most of the soils in the county are moderately leached, an important factor in horizon development. Some, such

as Staser soils, are only slightly leached, whereas others, such as Enders, Hector, Linker, and Mountainburg soils, are strongly leached.

Oxidation of iron is evident in the moderately well drained and well drained soils in the county. Oxidation of iron is indicated by the red and brown subsoils of Linker, Mountainburg, Enders, and Leadvale soils on the uplands and Beulah, Bosket, and Dexter soils on the lowlands.

Reduction and transfer of iron have occurred to a significant degree in the poorly drained and somewhat poorly drained lowland soils. In naturally wet soils, this process is called gleying. Gray colors in horizons below the surface indicate the reduction and loss of iron. Some horizons contain reddish or yellowish mottles and concretions derived from segregated iron. Gleying is most pronounced in Amagon, Calhoun, Crowley, Foley, Forestdale, and Sharkey soils.

Translocation of silicate clay minerals has contributed to horizon development in most of the soils in the county. In cultivated areas most of the eluviated A2 horizon has been destroyed, but where it occurs, the structure is blocky or platy, clay content is less than in the lower horizons where clay has accumulated, and the soils are lighter in color. Generally, clay films have accumulated in pores and on ped surfaces in the B horizon. The soils were probably leached of carbonates and soluble salts to a great extent before translocation of silicate clay occurred, even though the content of bases is still high in lowland soils.

Leaching of bases and translocation of silicate clay are among the most important processes in horizon differentiation in the soils of Jackson County.

Classification of Soils

Soils are classified so that we can more easily remember their significant characteristics. Classification enables us to assemble knowledge about the soils, to see their relationship to one another and to the whole environment, and to develop principles that help us to understand their behavior and their response to manipulation. First through classification, and then through use of soil maps, we can apply our knowledge of soils to specific fields and other tracts of land.

Thus in classification, soils are placed in narrow categories that are used in detailed soil surveys so that knowledge about the soils can be organized and used in managing farms, fields, and woodlands; in developing rural areas; in engineering work; and in many other ways. Soils are placed in broad classes to facilitate study and comparison in large areas, such as countries and continents.

Two systems of classifying soils have been used in the United States in recent years. The older system was adopted in 1938 (*11*) and later revised (*10*). The system currently used was adopted for general use by the National Cooperative Soil Survey in 1965. It is under continual study (*9*, *15*). Therefore, readers interested in developments of the current system should search the latest literature available. The soil series of Jackson County are placed in some categories of the current system in table 10.

TABLE 10.—*Soil series classified into higher categories*

Series	Family	Subgroup	Order
Amagon [1]	Fine-silty, mixed, thermic	Typic Ochraqualfs	Alfisols.
Beulah	Coarse-loamy, mixed, thermic	Typic Dystrochrepts	Inceptisols.
Bosket	Fine-loamy, mixed, thermic	Mollic Hapludalfs	Alfisols.
Calhoun	Fine-silty, mixed, thermic	Typic Glossaqualfs	Alfisols.
Crowley	Fine, montmorillonitic, thermic	Typic Albaqualfs	Alfisols.
Dexter [2]	Fine-silty, mixed, thermic	Ultic Hapludalfs	Alfisols.
Dundee	Fine-silty, mixed, thermic	Aeric Ochraqualfs	Alfisols.
Egam	Fine, mixed, thermic	Cumulic Hapludolls	Mollisols.
Enders	Clayey, mixed, thermic	Typic Hapludults	Ultisols.
Foley	Fine-silty, mixed, thermic	Albic Glossic Natraqualfs	Alfisols.
Forestdale	Fine, montmorillonitic, thermic	Typic Ochraqualfs	Alfisols.
Grubbs	Fine, mixed, thermic	Aquic Hapludalfs	Alfisols.
Hector	Loamy, siliceous, thermic	Lithic Dystrochrepts	Inceptisols.
Hillemann	Fine-silty, mixed, thermic	Albic Glossic Natraqualfs	Alfisols.
Jackport	Very-fine, montmorillonitic, thermic	Vertic Ochraqualfs	Alfisols.
Lafe	Fine-silty, mixed, thermic	Glossic-Natrudalfs	Alfisols.
Leadvale	Fine-silty, siliceous, thermic	Typic Fragiudults	Ultisols.
Linker	Fine-loamy, siliceous, thermic	Typic Hapludults	Ultisols.
McCrory [3]	Fine-loamy, mixed, thermic	Albic Glossic Natraqualfs	Alfisols.
Mountainburg	Loamy-skeletal, siliceous, thermic	Lithic Hapludults	Ultisols.
Patterson [4]	Coarse-loamy, mixed, thermic	Aeric Ochraqualfs	Alfisols.
Sequatchie	Coarse-loamy, siliceous, thermic	Humic Hapludults	Ultisols.
Sharkey	Very-fine, montmorillonitic, nonacid, thermic	Vertic Haplaquepts	Inceptisols.
Staser	Fine-loamy, mixed, thermic	Cumulic Hapludolls	Mollisols.

[1] Amagon soils in this survey are taxadjuncts to the series. They have slightly less very fine sand in the B2t horizon than is defined as the range for the series.

[2] Some Dexter soils in this survey are taxadjuncts to the series. They have hues of 10YR in the B horizon, and are thus outside the range defined for the series.

[3] McCrory soils in this survey are taxadjuncts to the series. They have slightly less clay in the upper 20 inches of the argillic horizon than is defined as the range for the series.

[4] Patterson soils in this survey are taxadjuncts to the series. They have colors of chroma 1 rather than chroma 2 in the B horizon, and are thus outside the range defined for the series.

ORDER: Ten soil orders are recognized in the current system. They are Entisols, Vertisols, Inceptisols, Aridisols, Mollisols, Spodosols, Alfisols, Ultisols, Oxisols, and Histosols. The properties used to differentiate the soil orders are those that tend to give broad climatic groups of soils. Two exceptions, the Entisols and Histosols, occur in many different climates.

As shown in table 10, four soil orders are represented in Jackson County—Inceptisols, Mollisols, Alfisols, and Ultisols.

Inceptisols are mineral soils that generally occur on young, but not recent, land surfaces. Horizons have definitely started to form in these soils.

Mollisols are soils that have a mollic epidedon, a diagnostic horizon that is a thick, dark-colored, friable layer at the surface. This layer is much like surface layers that form under grass. It has a moderate or strong structure and a base saturation of 50 percent or more. These soils are dominantly saturated with bivalent cations and have argillic or cambic horizons. Argillic and cambic horizons are diagnostic horizons that form below the soil surface. An argillic horizon is one in which illuvial silicate clay has accumulated. This horizon is called a natric horizon if it contains an appreciable amount of exchangeable sodium and has prismatic or columnar structure. A cambic horizon is a layer in which changes have been sufficient to give rise to soil structure, liberate iron, form silicate clay minerals, obliterate most evidence of original rock structure, or some combination of these.

Alfisols are soils that have argillic or natric horizons that have accumulated iron and aluminum. Alfisols have a base saturation of more than 35 percent.

Ultisols are mineral soils that have a horizon of clay accumulation and a base saturation of less than 35 percent.

SUBORDER: Each order is divided into suborders, primarily on the basis of those characteristics that seem to produce classes with the greatest genetic similarity. The suborders narrow the broad climatic range permitted in the orders. Soil properties used to separate suborders mainly reflect either the presence or absence of waterlogging or soil differences resulting from climate or vegetation.

GREAT GROUP: Suborders are separated into great groups on the basis of uniformity in kinds and sequence of major soil horizons and features. The horizons used to make separations are those in which clay, iron, or humus have accumulated or those that have restrictive layers that interfere with the growth of roots or movement of water. The features used are the self-mulching properties of certain clays, soil temperature, major differences in chemical composition (mainly content of calcium, magnesium, sodium, and potassium), and the like. The great group is not shown separately in table 10 because it is the last word in the name of the subgroups.

SUBGROUP: Great groups are divided into subgroups, one representing the central (typic) segment of the group, and others, called intergrades, that have properties of the group and also one or more properties of another great group, suborder, or order. Subgroups may also be made in those instances where soil properties intergrade outside the range of any other great group, suborder, or order. The names of subgroups are derived by placing one or more adjectives before the name of the great group.

FAMILY: Families are separated within a subgroup primarily on the basis of properties important to the growth of plants or behavior of soils when used for engineering. Among the properties considered are texture, mineral content, reaction, soil temperature, permeability, thickness of horizons, and consistence.

Nomenclature

The nomenclature of classes in each of the five highest categories is mainly connotative. The formative elements come chiefly from the classical languages. Because many of the roots are familiar, they are helpful in visualizing the characteristics of the soil. For example, Leadvale soils are classified as Typic Fragiudults. The formative elements indicate that Leadvale soils are typical (typ) of the soils that have a fragipan (frag), formed under humid climate (ud), and have low base saturation (ult). The base saturation is less than 35 percent 30 inches below the top of the fragipan.

The names are distinctive for the classes in each category so that they indicate the category to which a given class belongs. Moreover, the names are so designed that each subgroup, by its name, identifies the soil with the great group, suborder, and order to which it belongs. For example, the name Typic Fragiudult indicates a class in a subgroup. From the name, one can identify the great group (Fragiudult), the suborder (Udults), and the order (Ultisols).

Physical and Chemical Analyses

Physical and chemical data resulting from laboratory analyses can be useful to the soil scientist in classifying soils. These data are helpful in estimating available water capacity, acidity, base-exchange capacity, mineral composition, organic-matter content, and other soil characteristics that affect management needs. The data are also helpful in developing concepts of soil formation. More recently, laboratory data have proved helpful in rating soils for nonfarm uses, that is, for residential, industrial, recreational, or transportational use.

Several factors are involved in selecting soils for laboratory analyses. Soils that are extensive and most important in the survey area are considered first. A review of available laboratory data is made to determine the need for additional information on these particular soils. Generally, priority is given to soils for which little or no laboratory data are available.

Soils representing nine soil series in the county were selected for laboratory analyses. Profiles of these soils are described in the section "Descriptions of the Soils." The analyses were made by the University of Arkansas in Fayetteville. Table 11 shows the results.

Particle-size distribution was determined by the hydrometer method (*4*).

Organic carbon was determined by the Walkley-Black method of digestion with potassium dichromate-sulfuric acid (*6*). The percentage of organic matter was then calculated using the equation, percent organic carbon $\times$ 1.72 = percent organic matter.

Soil pH was determined using a Beckman pH meter on mixtures of soil and water at a 1:1 ratio. Available

TABLE 11.—*Physical and chemical*

[Analysis made by the University of Arkansas, Fayetteville, Ark.; dashes indicate no

Soil, sample number, and inches from surface	Horizon	Particle size distribution					
		Very coarse to medium sand (2.0–0.25 mm.)	Fine sand (0.25–0.10 mm.)	Very fine sand (0.10–0.05 mm.)	Total sand (2.0–0.05 mm.)	Silt (0.05–0.002 mm.)	Clay (0.002 mm.)
Beulah fine sandy loam: (S–70–Ark–34–2)		*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
0–10	Ap	3	65	14	82	13	5
10–14	B21	2	60	14	76	16	8
14–42	B22	2	55	13	70	19	11
Dexter silt loam: (S–69–Ark–34–8)							
0–7	Ap	2	10	7	19	67	14
7–16	B21t	1	8	7	16	61	23
16–29	B22t	2	8	9	19	55	26
29–48	B23t	1	6	12	19	47	34
48–63	B3	2	20	26	48	32	20
63–72	IIC	17	59	8	84	6	10
Egam silt loam: (S–69–Ark–34–9)							
0–8	Ap	----------	----------	1	1	68	31
8–22	B21	----------	----------	1	1	63	36
22–46	B22	----------	1	4	5	58	37
46–72	B23	----------	10	18	28	48	24
Enders silt loam: (S–69–Ark–34–7)							
0–6	Ap	4	6	14	24	66	10
6–11	B1	13	15	13	41	36	23
11–20	B21t	5	2	8	15	31	54
20–27	B22t	----------	1	7	8	26	66
27–33	B3	----------	2	8	10	28	62
33–41	C	4	2	10	16	43	41
Lafe silt loam: (S–69–Ark–34–13)							
0–7	Ap	8	8	13	29	60	11
7–13	B21t	1	4	8	13	55	32
13–24	B22t	1	2	7	10	52	38
24–37	B23t	1	5	18	24	50	26
37–47	IIB24t	1	49	22	72	20	8
47–58	IIB3	1	65	23	89	9	2
58–72	IIC	5	36	35	76	20	4
Leadvale silt loam: (S–69–Ark–34–5)							
0–7	Ap	11	7	3	21	70	9
7–17	B21t	7	4	2	13	65	22
17–24	B22t	7	5	1	13	62	25
24–32	Bx1	8	5	2	15	63	22
32–46	Bx2	14	8	3	25	42	33
46–60	Bx3	36	16	4	56	23	21
Linker fine sandy loam: (S–69–Ark–34–2)							
0–2	A1	28	20	3	51	44	5
2–7	A2	25	23	3	51	43	6
7–12	B1	24	19	3	46	41	13
12–27	B21t	21	18	3	42	33	25
27–32	B22t	38	25	4	67	20	13
32–41	B3	42	30	5	77	13	10
Sequatchie loam: (S–69–Ark–34–4)							
0–5	Ap	10	33	8	51	41	8
5–10	A1	9	32	8	49	41	10
10–30	B2t	3	22	11	36	50	14
30–38	B3	17	39	8	64	27	9
38–72	C	25	50	7	82	14	4

See footnote at end of table.

analysis of selected soils

analysis was made or data resulting from analysis was insignificant]

Milliequivalents per 100 grams of soil					Base saturation	Reaction (1:1 soil-water ratio)	Organic matter	Available phosphorus
Extractable bases				Extractable acidity				
Ca	Mg	Na	K					
					Pct.	pH	Pct.	p/m
1.1	0.3	0.1	0.2	2.8	38	5.6	0.7	28
2.1	.4	.2	.2	2.7	52	5.7	.5	16
3.4	.3	.2	.1	3.3	55	6.0	.3	22
6.5	1.0	.2	.2	4.0	66	6.7	1.7	----
5.5	1.7	.2	.2	6.3	55	5.9	.7	17
3.9	1.7	.2	.3	10.0	38	5.1	.4	19
3.4	3.2	.2	.4	17.2	30	4.7	.4	17
2.8	2.4	.3	.4	10.4	36	4.8	.3	22
2.3	1.6	.2	.2	5.5	44	5.1	.2	22
10.3	3.1	.2	.3	6.9	67	6.3	2.5	19
12.6	3.0	.2	.3	7.8	67	6.6	1.7	13
10.7	2.9	.2	.3	8.8	62	6.1	1.5	17
7.4	2.2	.2	.3	6.1	62	6.0	.8	19
10.3	1.0	.2	.4	3.7	76	6.9	3.8	37
2.8	.7	.2	.4	10.6	28	5.4	1.7	4
.4	1.4	.2	.3	30.1	7	4.7	.8	4
.1	1.4	.2	.4	42.5	5	4.6	.7	4
.1	1.8	.3	.4	39.9	6	4.5	.6	3
.1	1.9	.3	.4	24.5	10	4.8	.6	4
2.1	1.1	.3	.1	6.1	37	5.9	1.6	9
4.8	3.8	3.6	.2	11.1	53	5.7	1.0	3
6.5	7.1	8.0	.3	3.3	87	7.9	.6	13
8.9	7.0	7.8	.3	3.1	89	8.7	.3	20
4.1	5.1	5.7	.2	----	(1)	8.4	.2	22
2.2	1.6	2.1	.1	----	(1)	8.3	.1	14
6.9	3.9	2.7	.2	----	(1)	8.5	.2	21
1.2	.6	.2	.2	5.4	29	5.1	1.7	11
1.1	.7	.2	.1	9.5	18	4.9	.6	3
.7	1.0	.2	.2	11.4	16	4.9	.4	3
.5	1.0	.2	.1	11.0	14	4.9	.3	3
.2	1.5	.4	.2	15.5	13	5.0	.3	3
.2	1.6	.5	.1	12.0	17	4.8	.2	2
2.8	.6	.1	.2	5.2	42	6.0	3.3	9
.7	.3	.1	.1	3.6	25	5.4	1.4	6
.5	.5	.2	.1	4.2	24	5.2	.6	6
1.5	2.3	.2	.3	9.9	30	5.2	.7	3
.6	1.1	.2	.2	6.3	25	5.3	.4	4
.3	.6	.2	.1	10.1	11	5.3	.1	5
2.1	.7	.1	.3	5.8	36	5.6	1.9	33
2.1	.5	.2	.1	6.0	33	5.4	1.5	15
2.4	.5	.2	.1	7.7	29	5.5	.9	6
.9	.3	.2	.1	5.7	21	5.1	.5	10
.6	.3	.2	.1	2.6	32	5.1	.3	13

TABLE 11.—*Physical and chemical*

Soil, sample number, and inches from surface	Horizon	Particle size distribution					
		Very coarse to medium sand (2.0–0.25 mm.)	Fine sand (0.25–0.10 mm.)	Very fine sand (0.10–0.05 mm.)	Total sand (2.0–0.05 mm.)	Silt (0.05–0.002 mm.)	Clay (0.002 mm.)
Staser silt loam:							
(S-69-Ark-34-20)		*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
0–7	Ap	--------------	4	11	15	63	22
7–15	A1	--------------	7	13	20	59	21
15–21	C1	--------------	14	17	31	51	18
21–33	C2	--------------	16	15	31	50	19
33–47	C3	1	36	13	50	35	15
47–72	C4	10	72	6	88	8	4

[1] Concentration of soluble salts.

phosphorus was extracted by the Bray No. 1 solution (0.03N NH4F in 0.025 N HCL) and determined colorimetrically.

The bases were extracted with pH 7 1N ammonium acetate. Magnesium was determined colorimetrically (*6*). The other bases were determined by flamephotometry. The extractable acidity was determined by the barium chloridetriethanolamine method (*2*).

The total of extractable calcium, potassium, magnesium, sodium, and extractable acidity is an approximation of the cation exchange capacity of the soil. Base saturation percent was determined by dividing this total into the sum of calcium, potassium, magnesium, and sodium and multiplying by 100.

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Glossary

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as crumbs, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Soil material, such as sand, silt, or clay, that has been deposited on land by streams.

Available water capacity (also termed available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil.

Base saturation. The degree to which material that has base-exchange properties is saturated with exchangeable cations other than hydrogen, expressed as a percentage of the cation-exchange capacity.

analysis of selected soils—Continued

Milliequivalents per 100 grams of soil					Base saturation	Reaction (1:1 soil-water ratio)	Organic matter	Available phosphorus
Extractable bases				Extractable acidity				
Ca	Mg	Na	K					
					Pct.	*pH*	*Pct.*	*p/m*
7. 1	2. 4	. 2	. 3	3. 6	74	7. 5	2. 3	29
9. 2	2. 4	. 2	. 2	4. 3	74	7. 5	2. 0	15
8. 2	1. 6	. 2	. 1	3. 0	77	7. 7	1. 5	12
9. 4	1. 3	. 2	. 2	3. 6	76	7. 6	1. 5	17
6. 4	1. 3	. 2	. 1	2. 2	78	7. 6	1. 0	16
3. 0	. 6	. 2	. 1	1. 0	80	7. 5	. 5	14

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of clay on the surface of a soil aggregate. Synonyms: clay coat, clay skin.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrations of compounds, or of soil grains cemented together. The composition of some concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are examples of material commonly found in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material, and tends to stretch somewhat and pull apart, rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard and brittle; little affected by moistening.

Drainage class (natural). Refers to the conditions of freqency and duration of periods of saturation or partial saturation that existed during the development of the soil, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven different classes of natural soil drainage are recognized.

Excessively drained soils are commonly very porous and rapidly permeable and have a low water-holding capacity.

Somewhat excessively drained soils are also very permeable and are free from mottling throughout their profile.

Well-drained soils are nearly free from mottling and are commonly of intermediate texture.

Moderately well drained soils commonly have a slowly permeable layer in or immediately beneath the solum. They have uniform color in the A and upper B horizons and have mottling in the lower B and the C horizons.

Somewhat poorly drained soils are wet for significant periods, but not all the time, and some soils commonly have mottling at a depth below 6 to 16 inches.

Poorly drained soils are wet for long periods and are light gray and generally mottled from the surface downward, although mottling may be absent or nearly so in some soils.

Very poorly drained soils are wet nearly all the time. They have a dark-gray or black surface layer and are gray or light gray, with or without mottling, in the deeper parts of the profile.

Eluviation. The movement of material from one place to another within the soil, in either true solution or colloidal suspension. Soil horizons that have lost material through eluviation are said to be eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Erosion. The wearing away of the land surface by wind (sandblast), running water, and other geological agents.

Fertility, soil. The quality of a soil that enables it to provide compounds, in adequate amounts and in proper balance, for the growth of specified plants, when other growth factors such as light, moisture, temperature, and the physical condition of the soil are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has been allowed to drain away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Flood plain. Nearly level land, consisting of stream sediments, that borders streams and is subject to flooding unless protected artifically.

Fragipan. A loamy, brittle, subsurface horizon that is very low in organic-matter content and clay but is rich in silt or very fine sand. The layer is seemingly cemented. When dry, it is hard or very hard and has a high bulk density in comparison with the horizon or horizons above it. When moist, the fragipan tends to rupture suddenly if pressure is applied, rather than to deform slowly. The layer is generally mottled, is slowly or very slowly permeable to water, and has few or many bleached fracture planes that form polygons. Fragipans are a few inches to several feet thick; they generally occur below the B horizon, 15 to 40 inches below the surface.

Gleyed soil. A soil in which waterlogging and lack of oxygen have caused the material in one or more horizons to be neutral gray in color. The term "gleyed" is applied to soil horizons with yellow and gray mottling caused by intermittent waterlogging.

Horizon, soil. A layer of soil, approximately parallel to the surface, that has distinct characteristics produced by soil-forming processes. These are the major horizons:

O horizon.—The layer of organic matter on the surface of a mineral soil. This layer consists of decaying plant residues.

A horizon.—The mineral horizon at the surface or just below an O horizon. This horizon is the one in which living organisms are most active and therefore is marked by the accumulation of humus. The horizon may have lost one or more of soluble salts, clay, and sesquioxides (iron and aluminum oxides).

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to

the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or some combination of these; (2) by prismatic or blocky structure; (3) by redder or stronger colors than the A horizon; or (4) by some combination of these. Combined A and B horizons are usually called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.—The weathered rock material immediately beneath the solum. In most soils this material is presumed to be like that from which the overlying horizons were formed. If the material is known to be different from that in the solum, a Roman numeral precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock usually underlies a C horizon, but may be immediately beneath an A or B horizon.

Illuviation. The accumulation of material in a soil horizon through the deposition of suspended material and organic matter removed from horizons above. Since part of the fine clay in the B horizon (or subsoil) of many soils has moved into the B horizon from the A horizon above, the B horizon is called an illuvial horizon.

Mottling, soil. Irregularly marked with spots of different colors that vary in number and size. Mottling in soils usually indicates poor aeration and lack of drainage. Descriptive terms are as follows: Abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are these: *fine,* less than 5 millimeters (about 0.2 inch) in diameter along the greatest dimension; *medium,* ranging from 5 millimeters to 15 millimeters (about 0.2 to 0.6 inch) in diameter along the greatest dimension; and *coarse,* more than 15 millimeters (about 0.6 inch) in diameter along the greatest dimension.

Ped. An individual natural soil aggregate, such as a crumb, a prism, or a block, in contrast to a clod.

Permeability. The quality that enables the soil to transmit water or air. Terms used to describe permeability are as follows: *very slow, slow, moderately slow, moderate, moderately rapid, rapid,* and *very rapid.*

pH value. A numerical means for designating acidity and alkalinity in soils. A pH value of 7.0 indicates precise neutrality; a higher value, alkalinity; and a lower value, acidity.

Plowpan. A compacted layer formed in the soil immediately below the plowed layer.

Profile, soil. A vertical section of the soil through all its horizons and extending into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is precisely neutral in reaction because it is neither acid nor alkaline. An acid, or "sour," soil is one that gives an acid reaction; an alkaline soil is one that is alkaline in reaction. In words, the degrees of acidity or alkalinity are expressed thus:

	pH		*pH*
Extremely acid	Below 4.5	Mildly alkaline	7.4 to 7.8
Very strongly acid	4.5 to 5.0	Moderately alkaline	7.9 to 8.4
Strongly acid	5.1 to 5.5	Strongly alkaline	8.5 to 9.0
Medium acid	5.6 to 6.0	Very strongly alkaline	9.1 and higher
Slightly acid	6.1 to 6.5		
Neutral	6.6 to 7.3		

Relief. The elevations or inequalities of a land surface, considered collectively.

Sand. Individual rock or mineral fragments in a soil that range in diameter from 0.05 to 2.0 millimeters. Most sand grains consist of quartz, but they may be of any mineral composition. The textural class name of any soil that contains 85 percent or more sand and not more than 10 percent clay.

Savanna. Area of grassland with scattered trees, either as individual trees or in clumps.

Silt. Individual mineral particles in a soil that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). Soil of the silt textural class is 80 percent or more silt and less than 12 percent clay.

Slope classes. The slope classes used in this soil survey are as follows:

	Percent of slope
Level	0 to 1
Nearly level	1 to 3
Gently sloping	3 to 8
Undulating	0 to 8
Moderately sloping	8 to 12
Moderately steep	12 to 25
Steep	25 to 40

Soil. A natural, three-dimensional body on the earth's surface that supports plants and that has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles, less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: *Very coarse sand* (2.0 to 1.0 millimeter); *coarse sand* (1.0 to 0.5 millimeter); *medium sand* (0.5 to 0.25 millimeter); *fine sand* (0.25 to 0.10 millimeter); *very fine sand* (0.10 to 0.05 millimeter); *silt* (0.05 to 0.002 millimeter); and *clay* (less than 0.002 millimeter). The separates recognized by the International Society of Soil Science are as follows: I (2.0 to 0.2 millimeter); II (0.2 to 0.02 millimeter); III (0.02 to 0.002 millimeter); IV (less than 0.002 millimeter).

Solum. The upper part of a soil profile, above the parent material, in which the processes of soil formation are active. The solum in mature soil includes the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristic of the soil are largely confined to the solum.

Structure, soil. The arrangement of primary soil particles into compound particles or clusters that are separated from adjoining aggregates and have properties unlike those of an equal mass of unaggregated primary soil particles. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular. Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering together without any regular cleavage, as in many claypans and hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. Technically, the part of the soil below the solum.

Surface soil. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, about 5 to 8 inches in thickness. The plowed layer.

Taxadjuncts. Soils that do not fit in a series that has been recognized in the classification system, nor are they recognized in a separate series. These soils strongly resemble soils of a recognized series, but they have one or more characteristics that are outside the range defined for the series.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it may soak into the soil or flow slowly to a prepared outlet without harm. Terraces in fields are generally built so they can be farmed. Terraces intended mainly for drainage have a deep channel that is maintained in permanent sod.

Terrace (geological). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea. Stream terraces are frequently called second bottoms, as contrasted to flood plains, and are seldom subject to overflow. Marine terraces were deposited by the sea and are generally wide.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay.* The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Water table. The highest part of the soil or underlying rock material that is wholly saturated with water. In some places an upper, or perched, water table may be separated from a lower one by a dry zone.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which plants (specifically sunflower) wilt so much that they do not recover when placed in a dark, humid atmosphere.

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GUIDE TO MAPPING UNITS

For a full description of a mapping unit, read both the description of the mapping unit and that of the soil series to which the mapping unit belongs. Management of the soils for crops and pasture is suggested in the description of each mapping unit. The capability grouping is described on pages 33 and 34. Other information is given in tables as follows:

Acreage and extent, table 2, p. 9.
Predicted yields, table 3, p. 34.
Woodland groups and wood crops, table 5, p. 38.
Engineering uses of soils, tables 6, 7, and 8, pp. 42 to 55.
Town and country planning, table 9, p. 60.

Map symbol	Mapping unit	Page	Capability unit Symbol	Woodland group Symbol
Af	Amagon and Forestdale silt loams	10	IIIw-1	1w6
BeU	Beulah fine sandy loam, undulating	10	IIs-1	2o4
BoA	Bosket fine sandy loam, 0 to 1 percent slopes	11	I-1	2o4
BoU	Bosket fine sandy loam, undulating	11	IIe-1	2o4
Co	Crowley silt loam	13	IIIw-2	3w9
Cr	Crowley and Hillemann silt loams	13	IIIw-2	3w9
De	Dexter silt loam, 0 to 1 percent slopes	14	I-1	2o4
DeU	Dexter silt loam, undulating	14	IIe-1	2o4
DvA	Dundee silt loam, 0 to 1 percent slopes	15	IIw-1	2w5
DvU	Dundee silt loam, undulating	15	IIw-1	2w5
Eg	Egam silt loam	16	IIw-2	2o4
EnD	Enders silt loam, 3 to 12 percent slopes	16	VIe-1	4o1
EsE	Enders stony silt loam, 12 to 25 percent slopes	16	VIIs-1	4x2
Fc	Foley-Calhoun complex	18	IIIw-3	3w9
Fm	Foley-Calhoun-McCrory complex	18	IIIw-3	3w9
Fo	Forestdale silty clay loam	19	IIIw-4	1w6
Gb	Grubbs silt loam	20	IIIw-2	3w8
Ja	Jackport silty clay loam	22	IIIw-4	2w6
La	Lafe silt loam	22	VIs-1	5t0
LdB	Leadvale silt loam, 1 to 3 percent slopes	24	IIe-2	4o7
LdC	Leadvale silt loam, 3 to 8 percent slopes	24	IIIe-1	4o7
LeD	Leadvale stony silt loam, 3 to 12 percent slopes	25	VIs-2	4x8
LfC	Linker fine sandy loam, 3 to 8 percent slopes	27	IIIe-1	4o1
LhF	Linker-Hector complex, 12 to 40 percent slopes	27	VIIs-2	4x2
MoD	Mountainburg stony fine sandy loam, 3 to 12 percent slopes	28	VIs-3	5d2
Pa	Patterson fine sandy loam	30	IIw-1	2w5
Se	Sequatchie loam	30	Vw-1	2o7
Sh	Sharkey silty clay loam	31	IIIw-4	2w6
St	Staser silt loam	32	IIw-2	2o4

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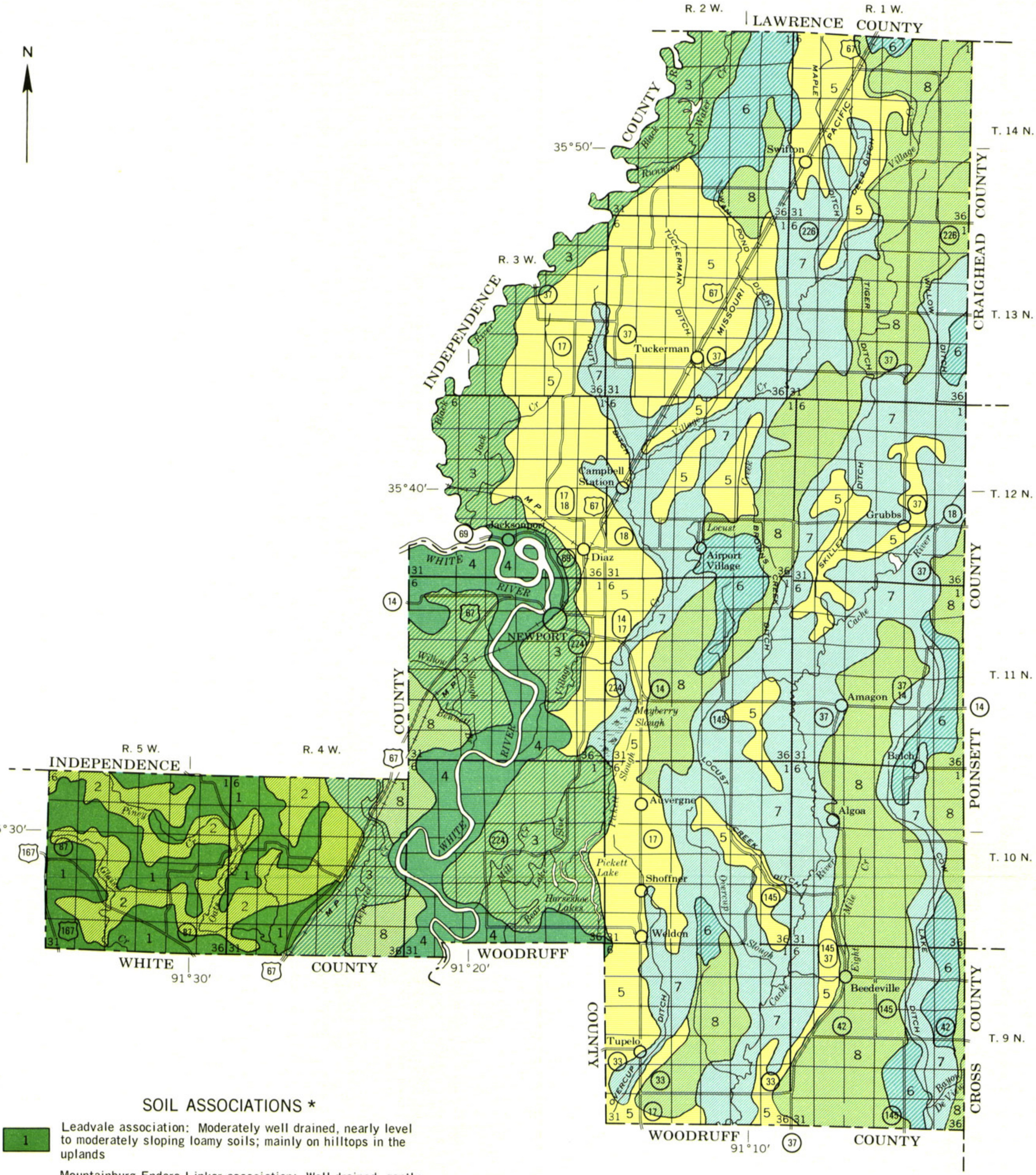


SOIL ASSOCIATIONS *

1. Leadvale association: Moderately well drained, nearly level to moderately sloping loamy soils; mainly on hilltops in the uplands
2. Mountainburg-Enders-Linker association: Well-drained, gently sloping to steep dominantly stony soils; mainly on benches and hillsides in the uplands
3. Dundee-Forestdale-Amagon association: Somewhat poorly drained and poorly drained, level and undulating loamy soils; on lower parts of old natural levees
4. Egam-Sharkey-Staser association: Well-drained to poorly drained, level loamy soils; on flood plains
5. Bosket-Dundee-Beulah association: Somewhat excessively drained to somewhat poorly drained, level and undulating loamy soils; on higher parts of old natural levees
6. Amagon-Dexter association: Poorly drained and well-drained, level and undulating loamy soils; on higher parts of old natural levees
7. Foley-Calhoun association: Poorly drained, level loamy soils that have a high concentration of sodium in the subsoil; on broad flats
8. Crowley-Jackport association: Poorly drained and somewhat poorly drained, level soils that have a clayey subsoil; on broad flats in high, abandoned, old back swamps

* Unless otherwise stated, texture refers to the surface layer of the major soils in each association.

Compiled 1972

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

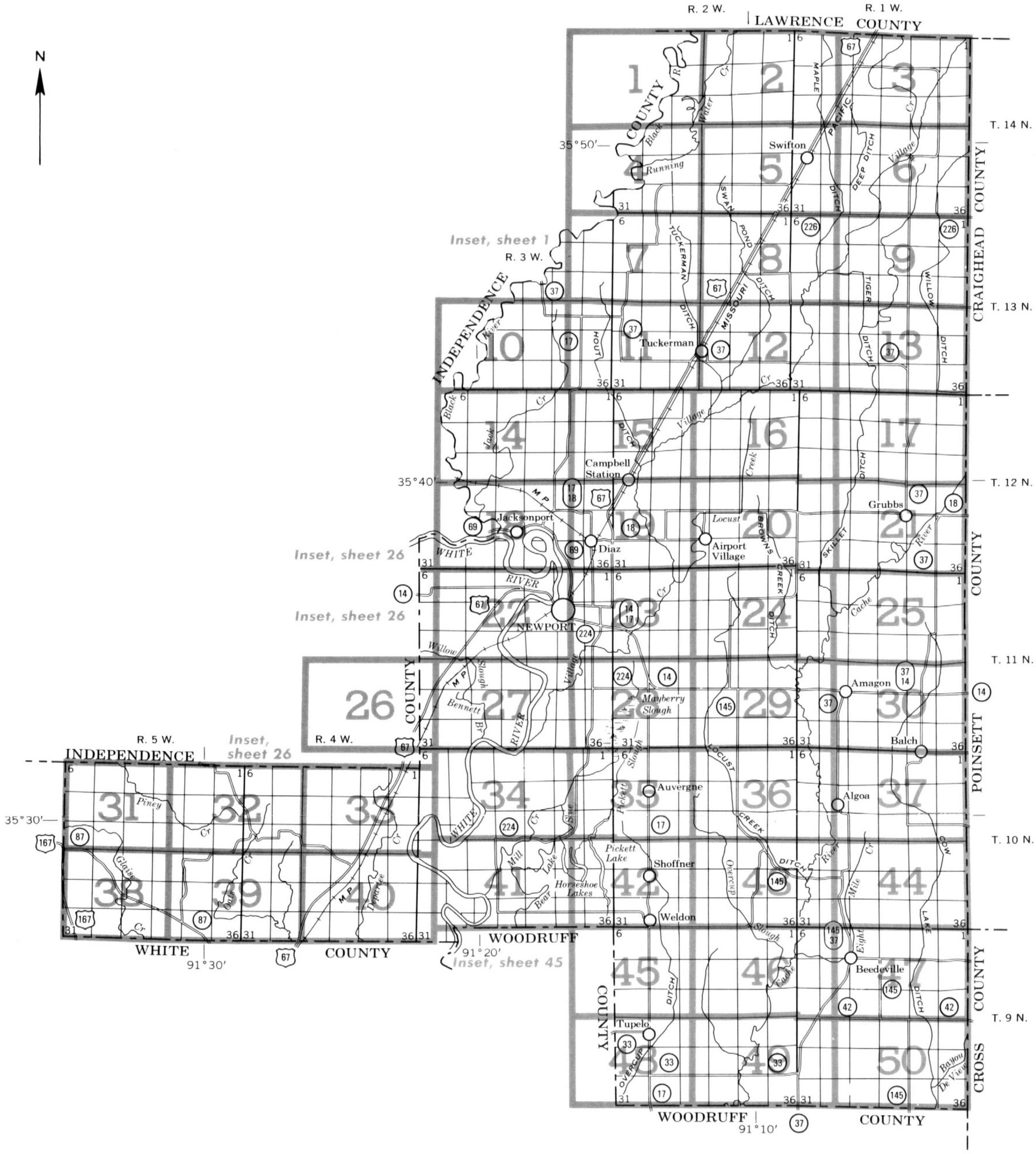
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
ARKANSAS AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

JACKSON COUNTY, ARKANSAS

Scale 1:253,440

1 0 1 2 3 4 Miles



INDEX TO MAP SHEETS

JACKSON COUNTY, ARKANSAS

Scale 1:253,440

1 0 1 2 3 4 Miles

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

CONVENTIONAL SIGNS

WORKS AND STRUCTURES

Highways and roads
- Divided
- Good motor
- Poor motor
- Trail

Highway markers
- National Interstate
- U. S.
- State or county

Railroads
- Single track
- Multiple track
- Abandoned

Bridges and crossings
- Road
- Trail
- Railroad
- Ferry (FY)
- Ford (FORD)
- Grade
- R. R. over
- R. R. under

Buildings
- School
- Church

Mine and quarry (QU.)

Gravel pit (G.P.)

Power line

Pipeline

Cemetery

Dams

Levee

Tanks

Well, oil or gas

Forest fire or lookout station

Windmill

Located object

BOUNDARIES

- National or state
- County
- Minor civil division
- Reservation
- Land grant
- Small park, cemetery, airport
- Land survey division corners

DRAINAGE

Streams, double-line
- Perennial
- Intermittent

Streams, single-line
- Perennial
- Intermittent
  - Crossable with tillage implements
  - Not crossable with tillage implements
  - Unclassified

Canals and ditches

Lakes and ponds
- Perennial (water, w)
- Intermittent (int)

Spring

Marsh or swamp

Wet spot

Drainage end or alluvial fan

RELIEF

Escarpments
- Bedrock
- Other

Short steep slope

Prominent peak

Depressions (Large, Small)
- Crossable with tillage implements
- Not crossable with tillage implements
- Contains water most of the time

SOIL SURVEY DATA

- Soil boundary and symbol (Dx)
- Gravel
- Stoniness
  - Stony
  - Very stony
- Rock outcrops
- Chert fragments
- Clay spot
- Sand spot
- Gumbo or scabby spot
- Made land
- Severely eroded spot
- Blowout, wind erosion
- Gully
- Borrow pit (B.P.)

SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, E, or F, shows a class of slope, and U shows an undulating soil. Symbols without a slope letter are those of level soils.

SYMBOL	NAME
Af	Amagon and Forestdale silt loams
BeU	Beulah fine sandy loam, undulating
BoA	Bosket fine sandy loam, 0 to 1 percent slopes
BoU	Bosket fine sandy loam, undulating
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LfC	Linker fine sandy loam, 3 to 8 percent slopes
LhF	Linker-Hector complex, 12 to 40 percent slopes
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Pa	Patterson fine sandy loam
Se	Sequatchie loam
Sh	Sharkey silty clay loam
St	Staser silt loam

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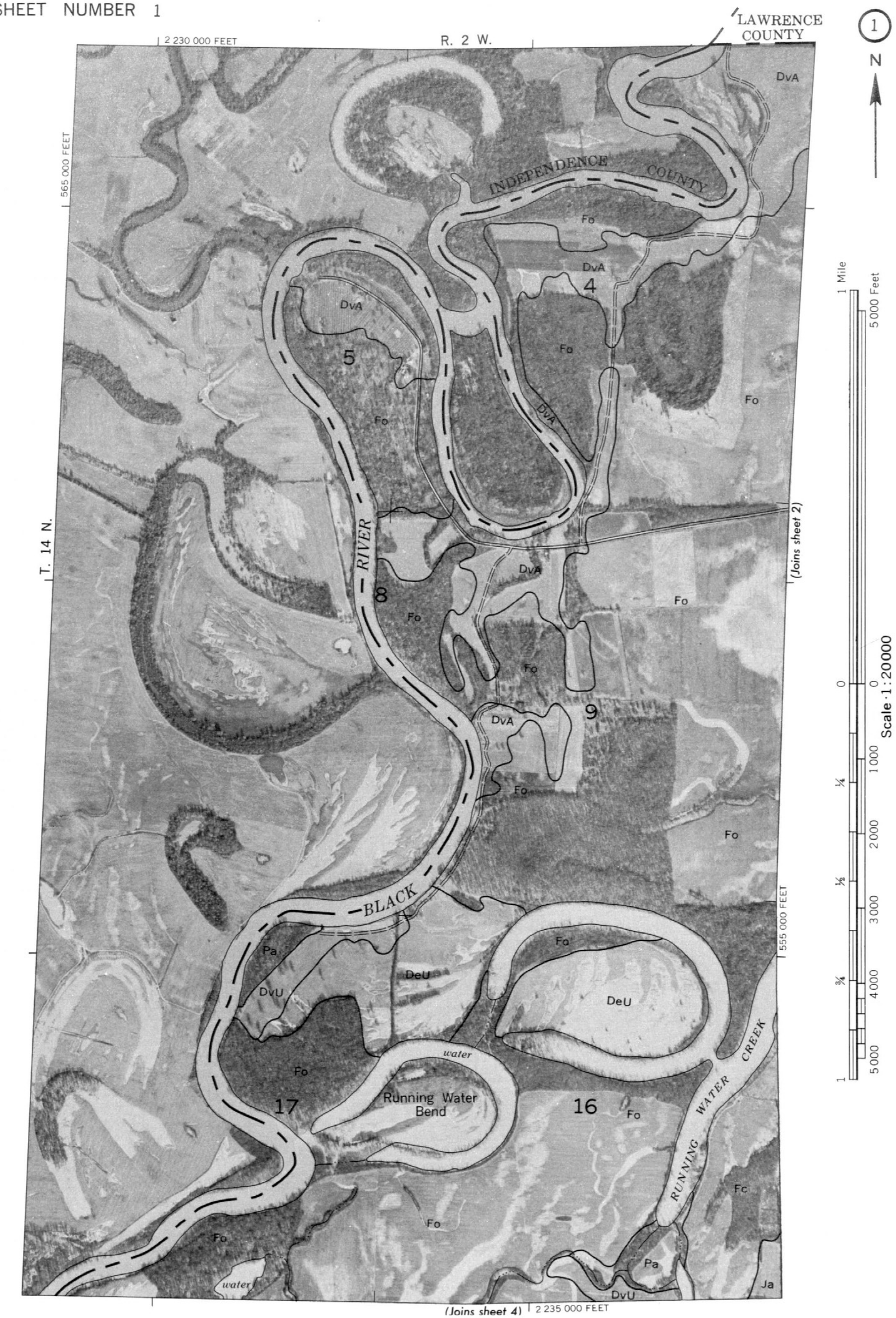

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 2

JACKSON COUNTY, ARKANSAS NO. 2

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JACKSON COUNTY, ARKANSAS — SHEET NUMBER 3

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JACKSON COUNTY, ARKANSAS NO. 3

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 4

JACKSON COUNTY, ARKANSAS NO. 4

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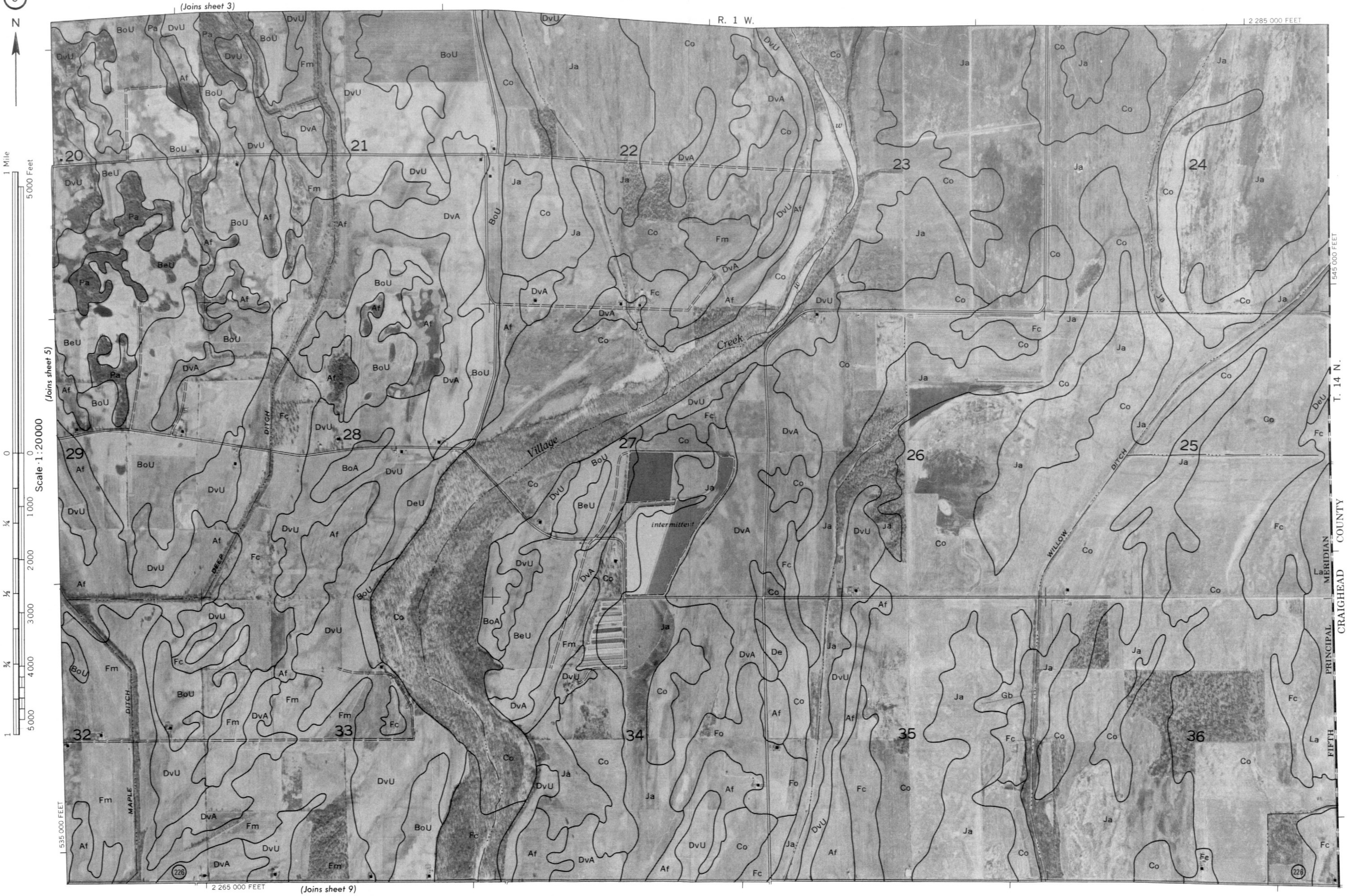
JACKSON COUNTY, ARKANSAS NO. 5

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 6



JACKSON COUNTY, ARKANSAS NO. 6

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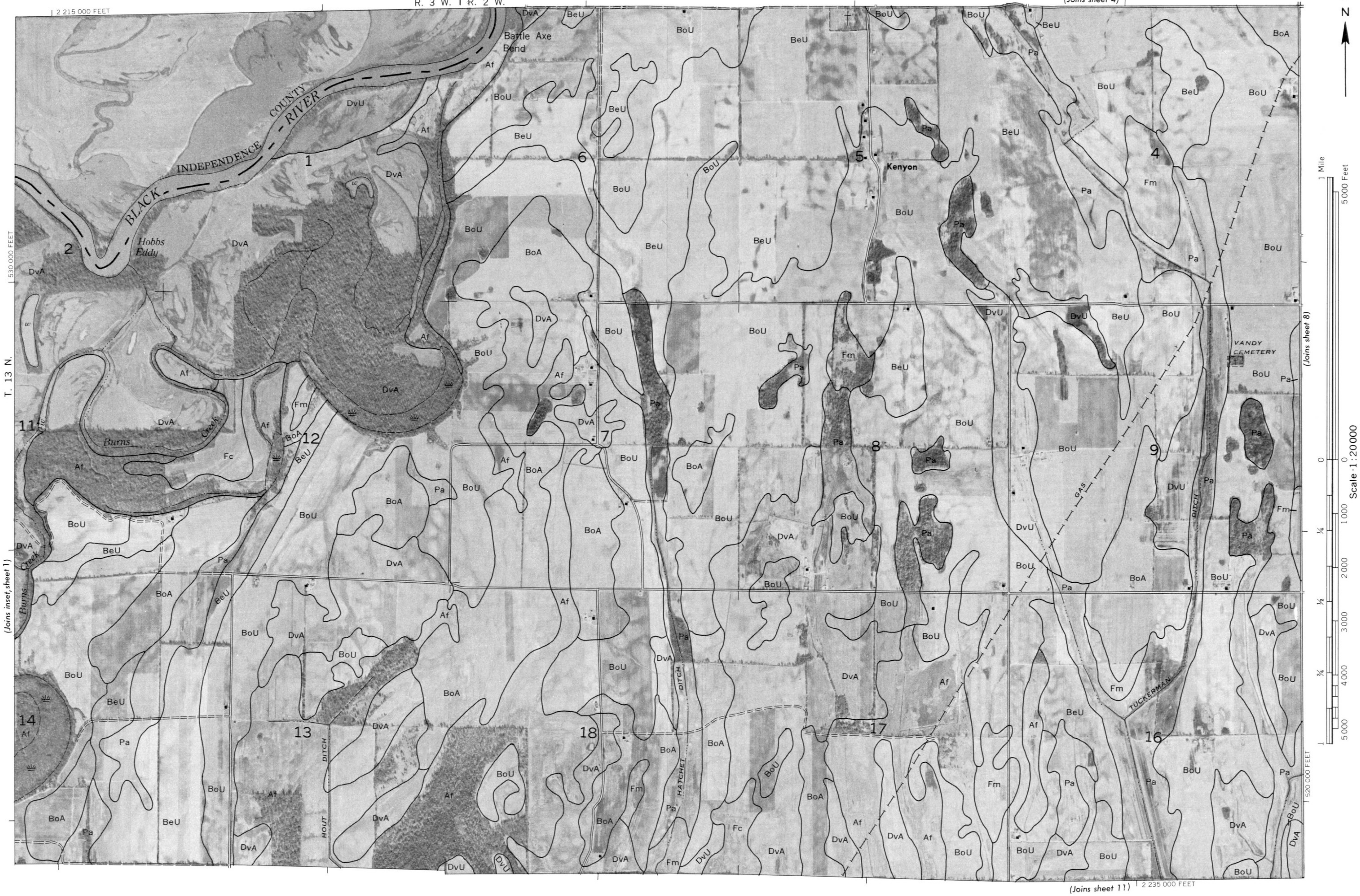
7



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JACKSON COUNTY, ARKANSAS NO. 7

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 8

N

Scale 1:20000

1 Mile

5000 Feet

JACKSON COUNTY, ARKANSAS NO. 8

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JACKSON COUNTY, ARKANSAS NO. 9

N

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 10

R. 3 W.

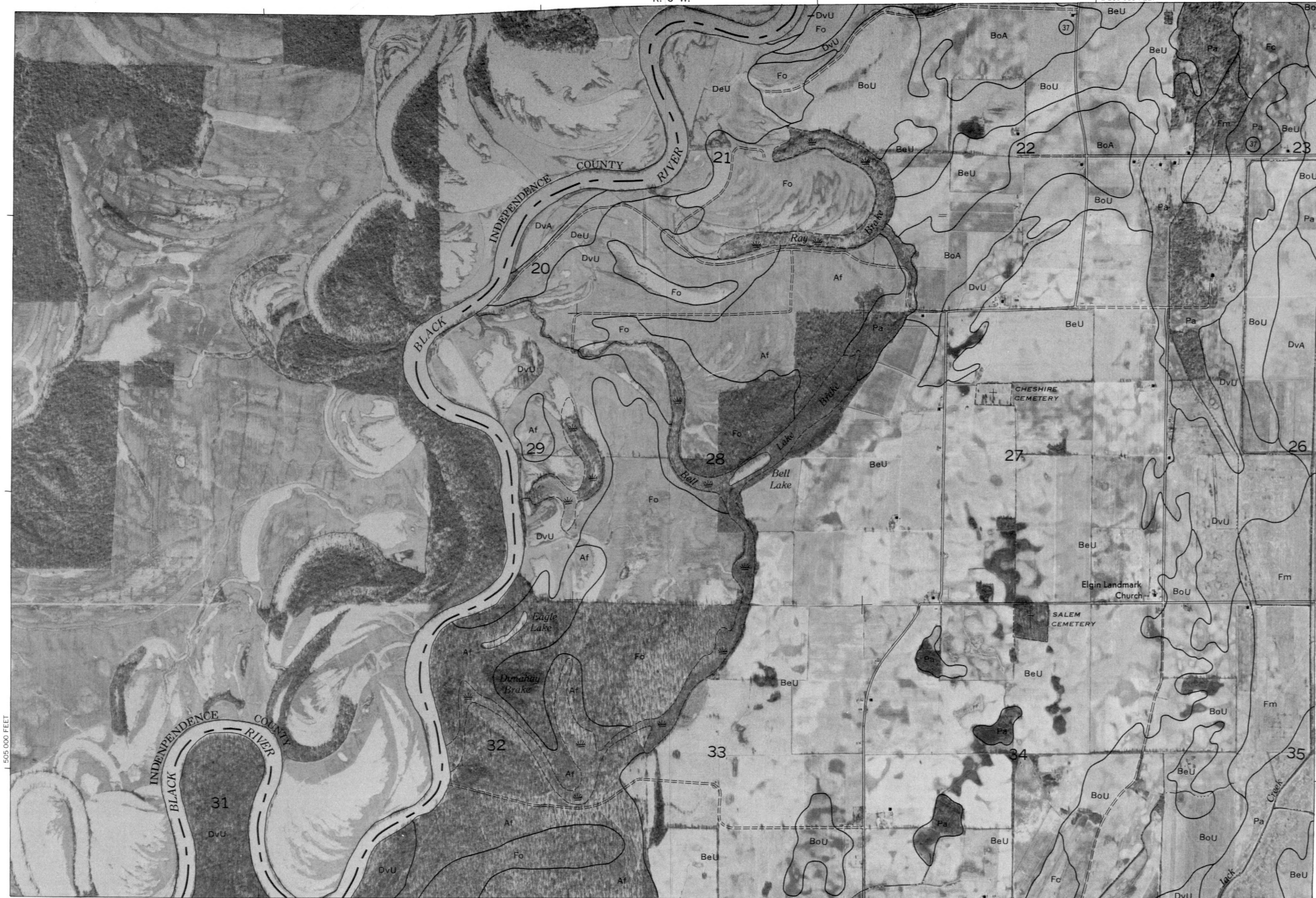
(Joins inset, sheet 1)

2 210 000 FEET

1 Mile
5 000 Feet
Scale 1:20000
0 ¼ ½ ¾ 1
0 1000 2000 3000 4000 5000

515 000 FEET

505 000 FEET



T. 13 N.

(Joins sheet 11)

2 195 000 FEET

(Joins sheet 14)

JACKSON COUNTY, ARKANSAS NO. 10

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JACKSON COUNTY, ARKANSAS NO. 11

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 12

JACKSON COUNTY, ARKANSAS NO. 12

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JACKSON COUNTY, ARKANSAS — SHEET NUMBER 14

JACKSON COUNTY, ARKANSAS NO. 14

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JACKSON COUNTY, ARKANSAS NO. 15

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 16

JACKSON COUNTY, ARKANSAS NO. 16

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JACKSON COUNTY, ARKANSAS NO. 17

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 18

N

1 Mile
5000 Feet
Scale 1:20000
0 ¼ ½ ¾ 1
0 1000 2000 3000 4000 5000

JACKSON COUNTY, ARKANSAS NO. 18

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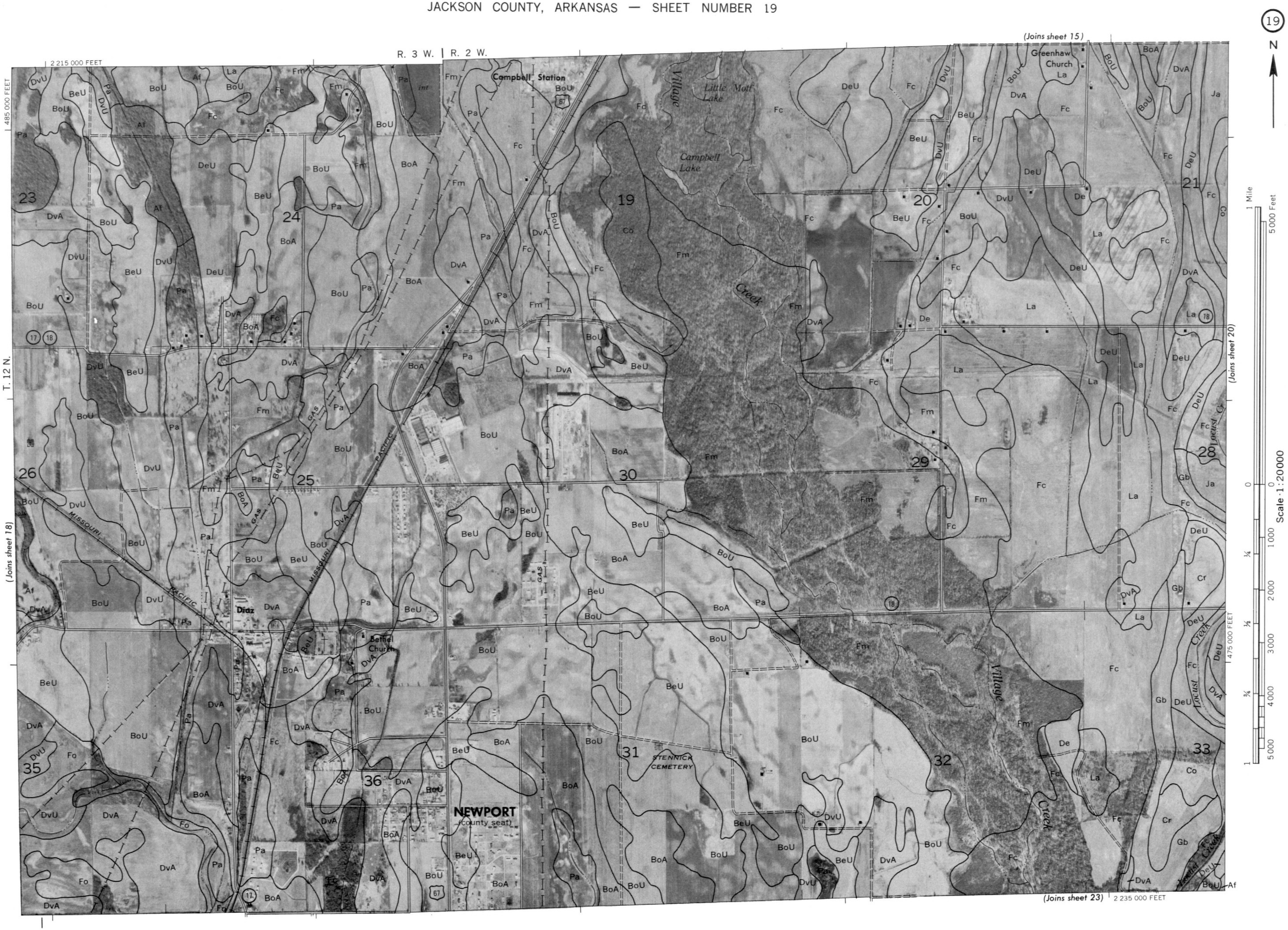
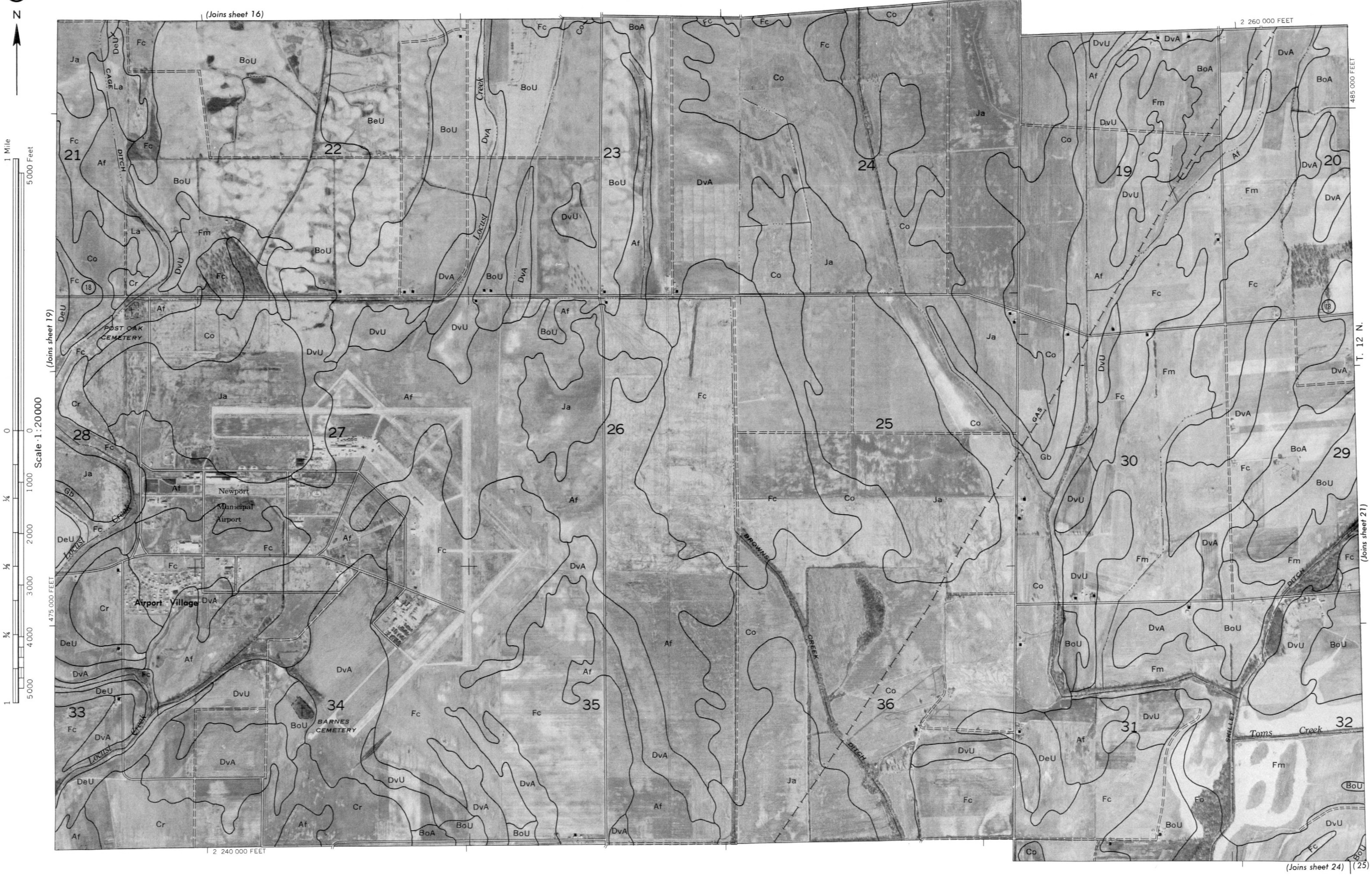
JACKSON COUNTY, ARKANSAS NO. 19



JACKSON COUNTY, ARKANSAS — SHEET NUMBER 20



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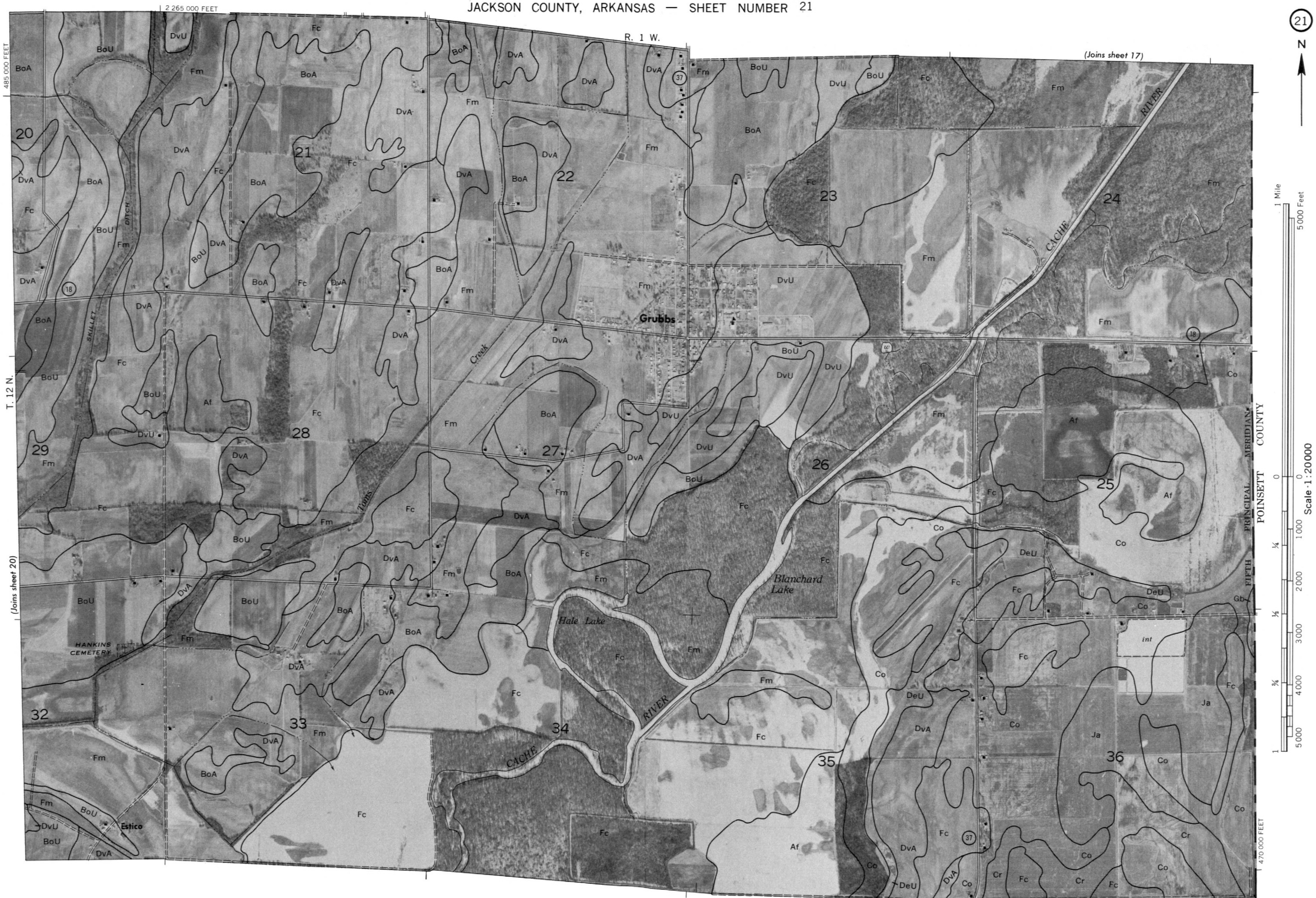

JACKSON COUNTY, ARKANSAS NO. 21

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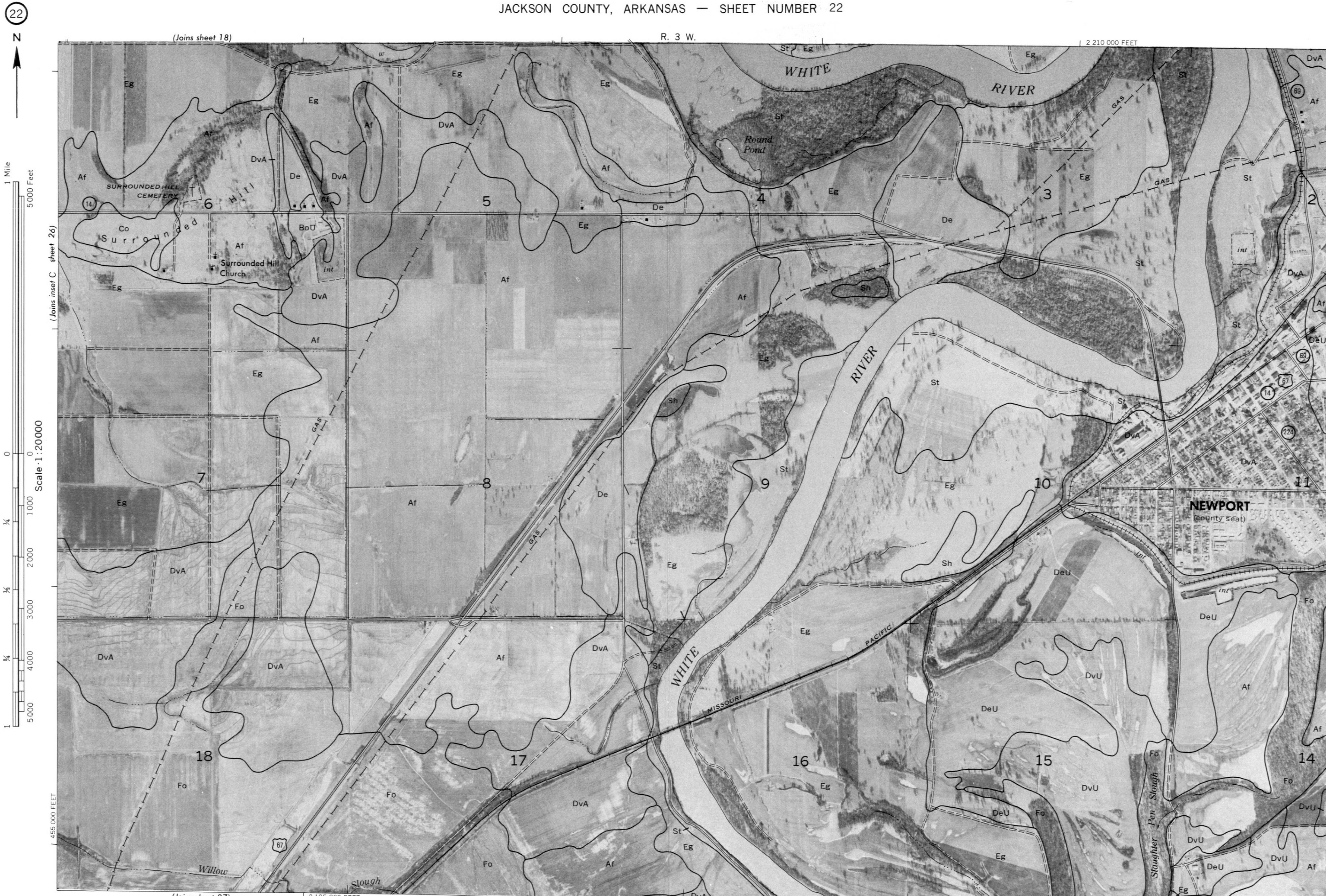

JACKSON COUNTY, ARKANSAS NO. 22

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JACKSON COUNTY, ARKANSAS — SHEET NUMBER 23

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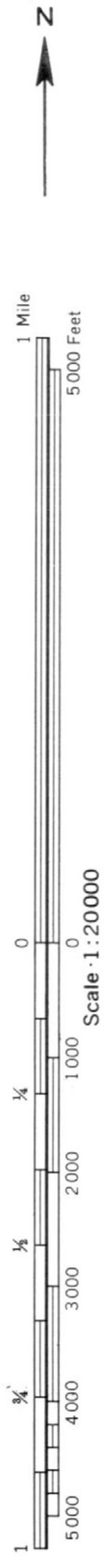
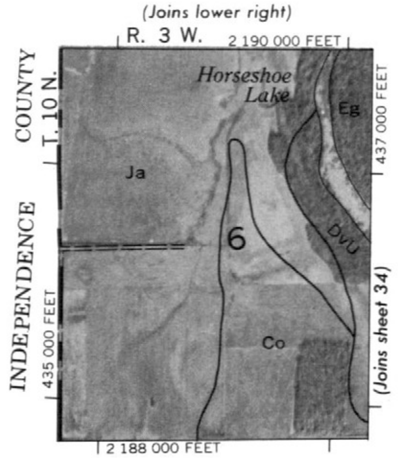
JACKSON COUNTY, ARKANSAS NO. 25

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 26



INSET A

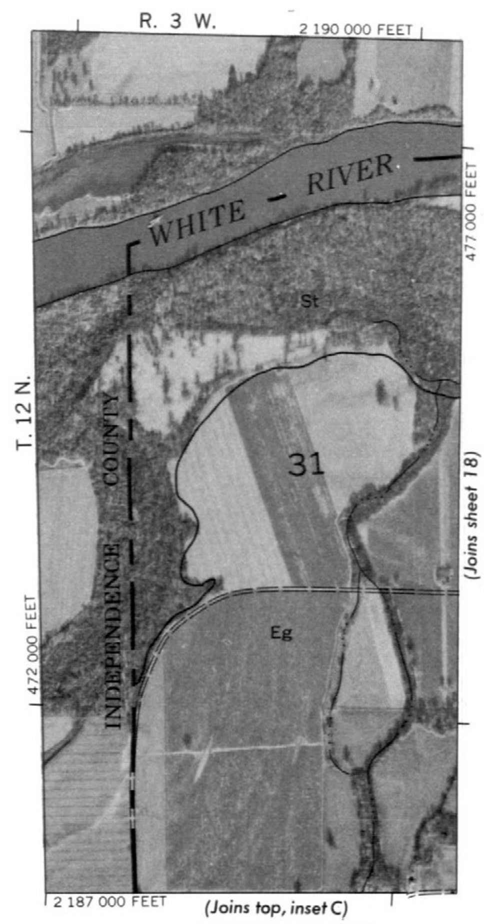
(Joins lower right)



(Joins sheet 33)

2000-FOOT GRID TICKS

INSET B

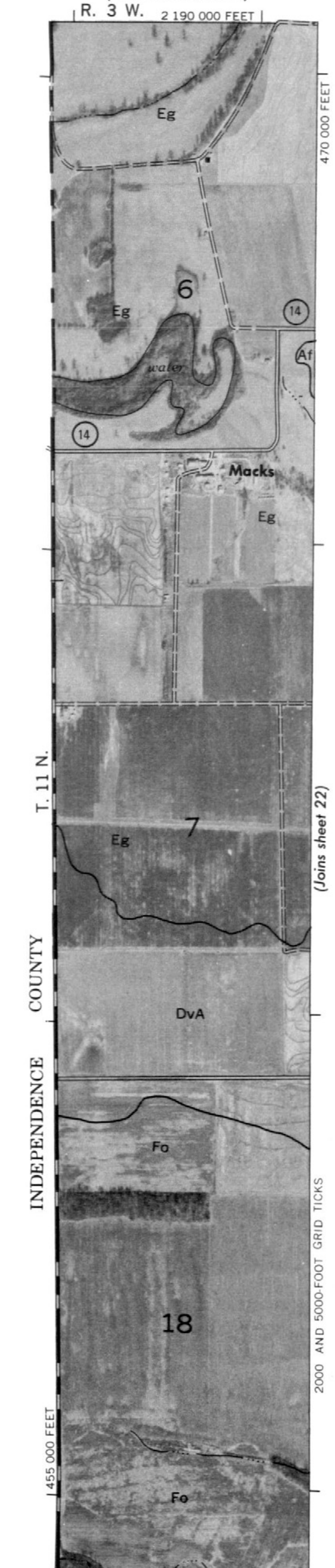


(Joins top, inset C)

3000 AND 5000-FOOT GRID TICKS

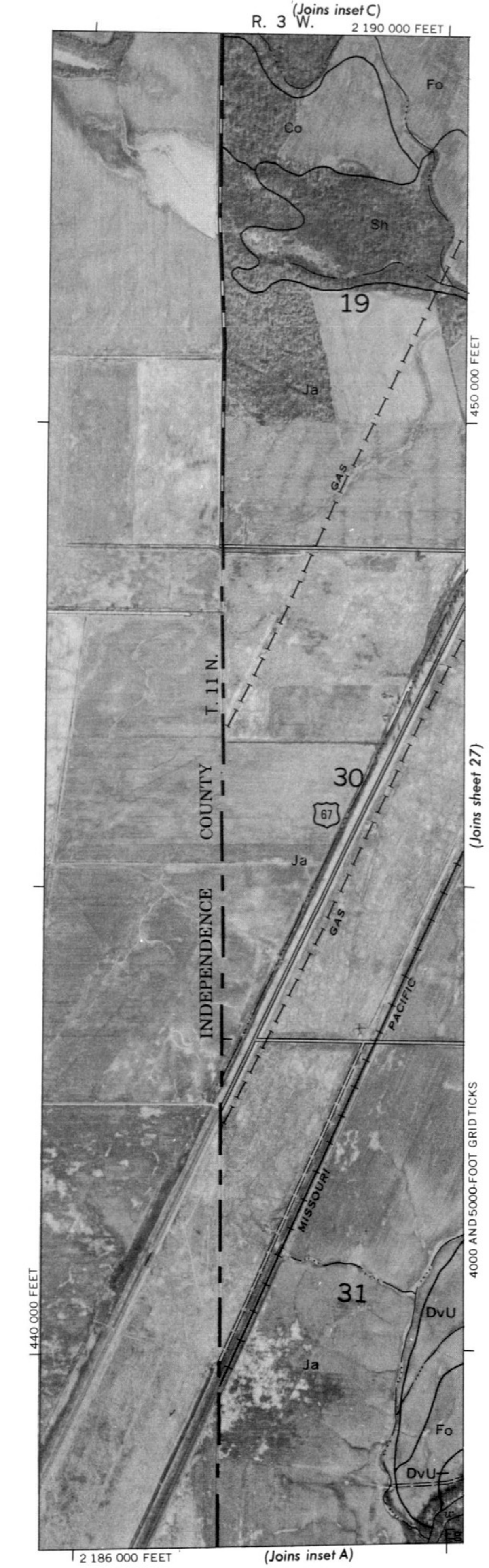
INSET C

(Joins bottom, inset B)



(Joins upper right)

(Joins inset C)



(Joins inset A)

JACKSON COUNTY, ARKANSAS NO. 26

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Arkansas Agricultural Experiment Station.

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Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS NO 27

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 28

JACKSON COUNTY, ARKANSAS NO. 28

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

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JACKSON COUNTY, ARKANSAS — SHEET NUMBER 29

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Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.
Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS NO. 30

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

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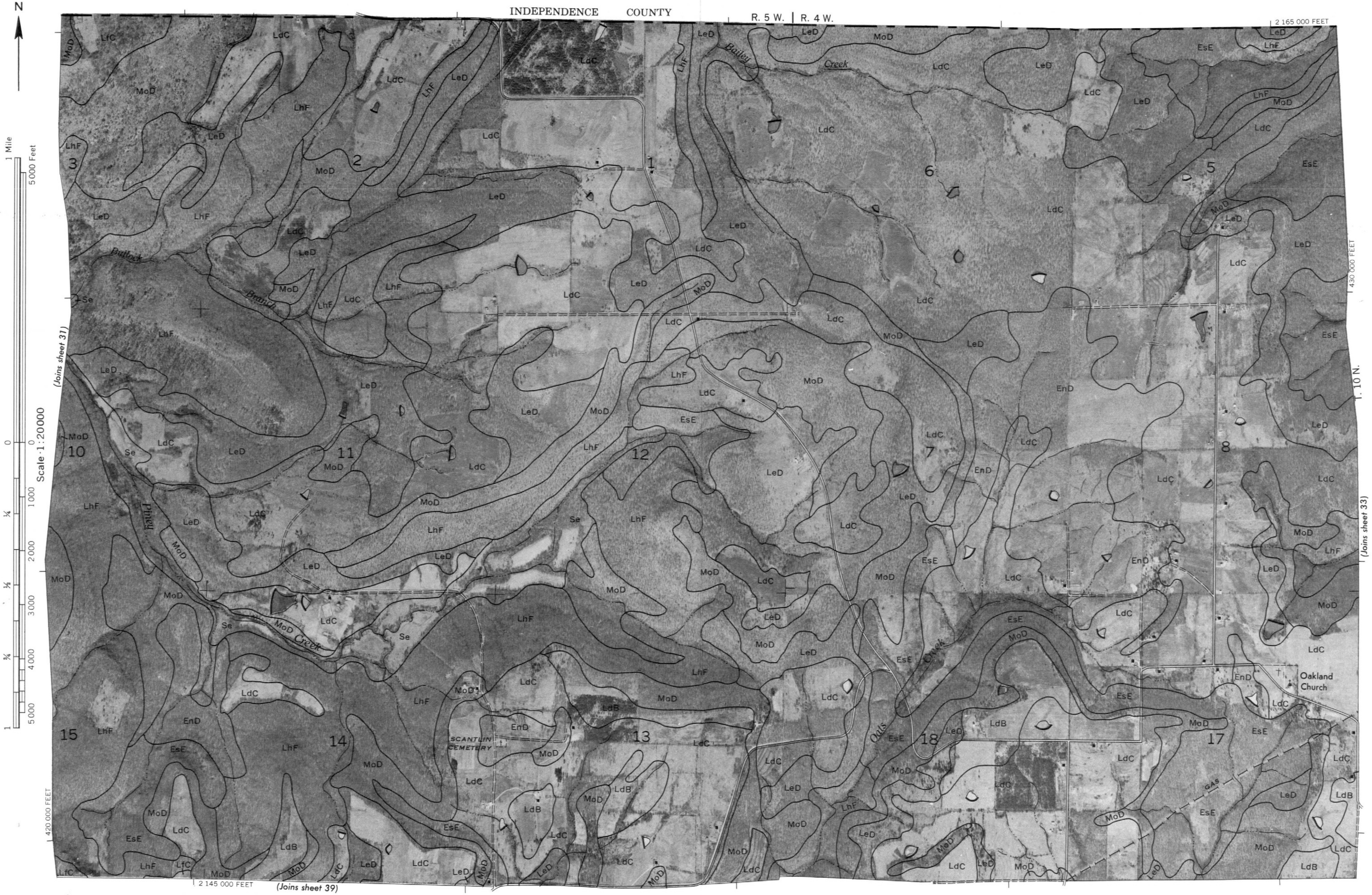
Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS NO. 31



JACKSON COUNTY, ARKANSAS NO. 32

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Arkansas Agricultural Experiment Station.

33

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Arkansas Agricultural Experiment Station.
Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.
Land division corners are approximately positioned on this map.

34

N

1 Mile

5 000 Feet

Scale 1:20000

0 ¼ ½ ¾ 1

0 1000 2000 3000 4000 5000

JACKSON COUNTY, ARKANSAS NO. 34

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

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(27) (Joins sheet 28)

R. 3 W. | R. 2 W.

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Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS NO. 35

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 36

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

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Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS NO. 37

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 38

JACKSON COUNTY, ARKANSAS NO. 38

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

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39

N

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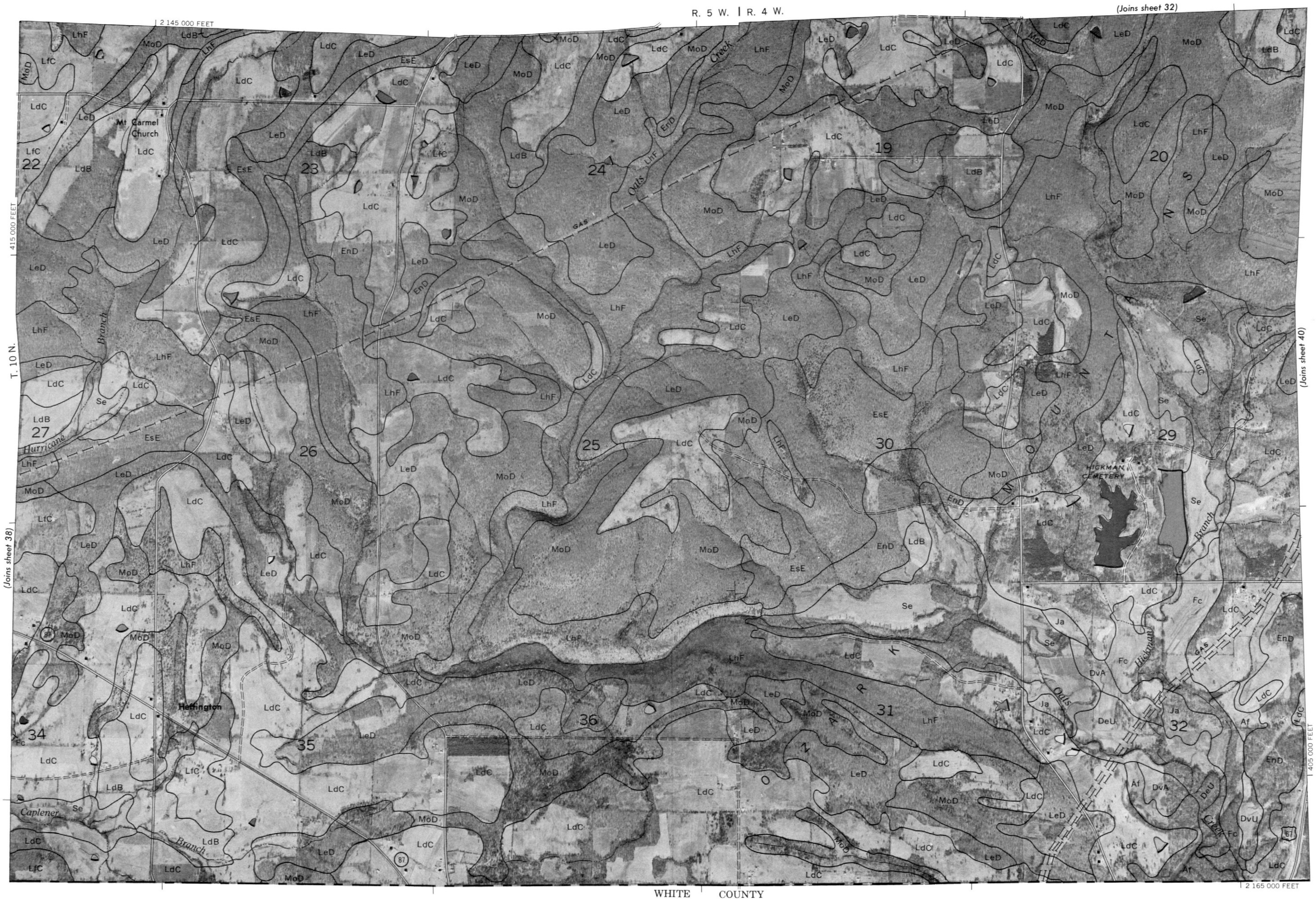
Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.
Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS NO. 39



1 Mile
5000 Feet
Scale 1:20000
0 ¼ ½ ¾ 1
0 1000 2000 3000 4000 5000

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 40

JACKSON COUNTY, ARKANSAS NO. 40

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

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Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 42

JACKSON COUNTY, ARKANSAS NO. 42

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

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Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 44

JACKSON COUNTY, ARKANSAS NO. 44

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

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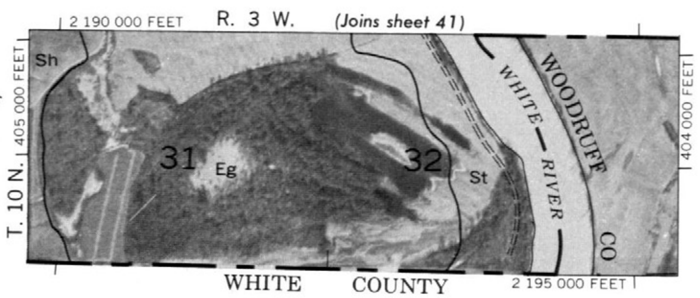
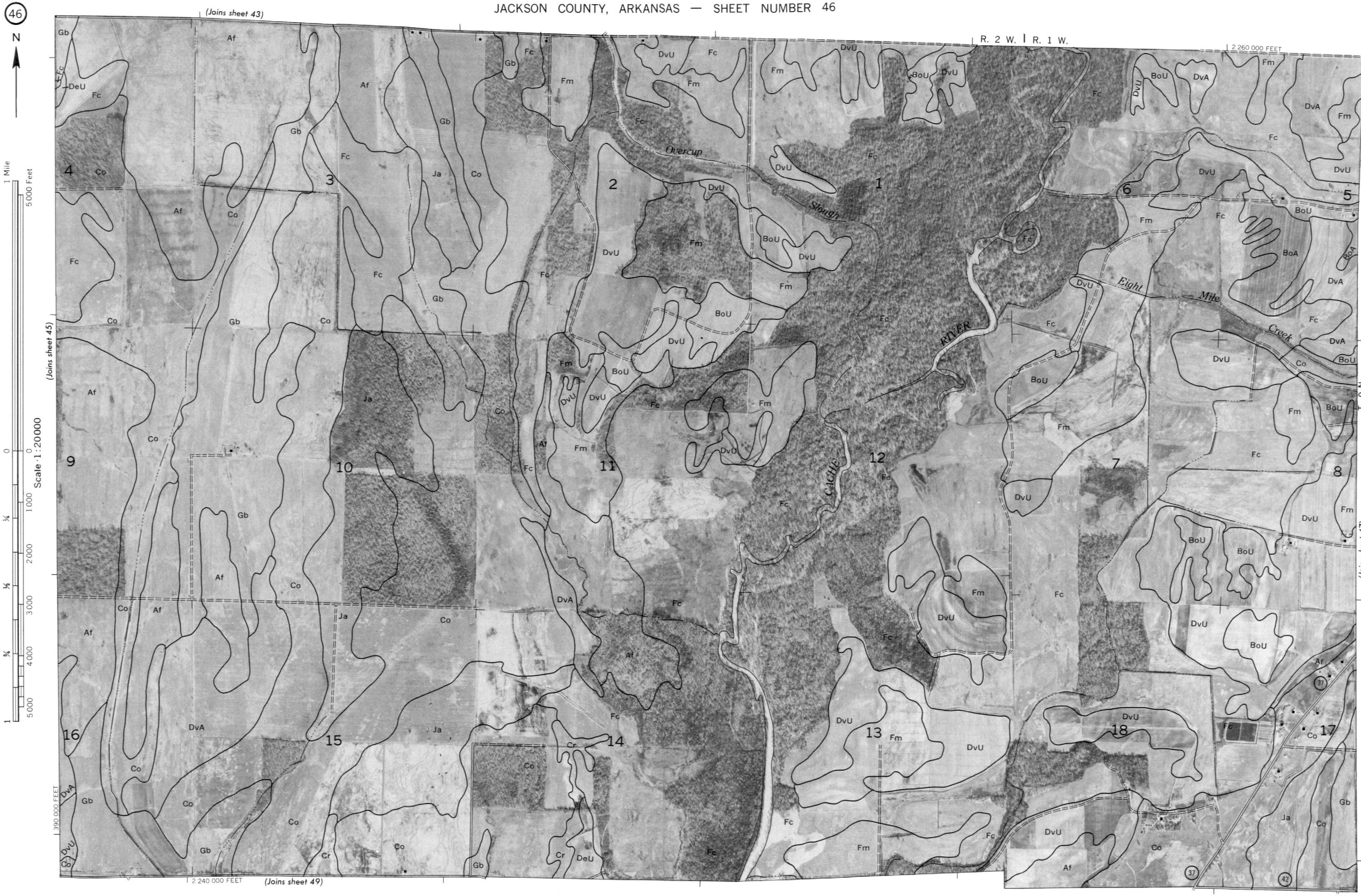
Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS NO. 45

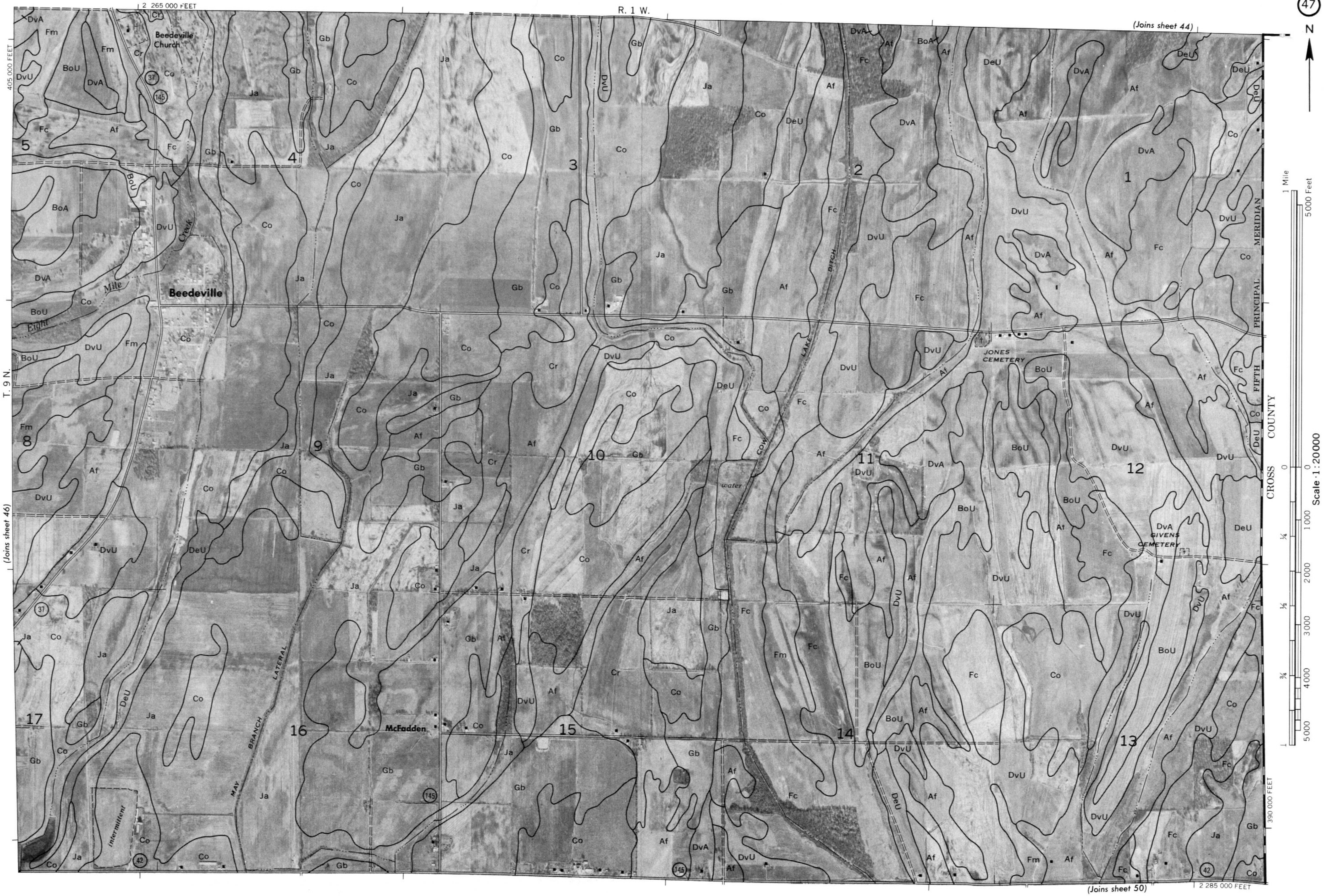


1000 AND 5000-FOOT GRID TICKS



Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Arkansas Agricultural Experiment Station.



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Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.
Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 48

JACKSON COUNTY, ARKANSAS NO. 48

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

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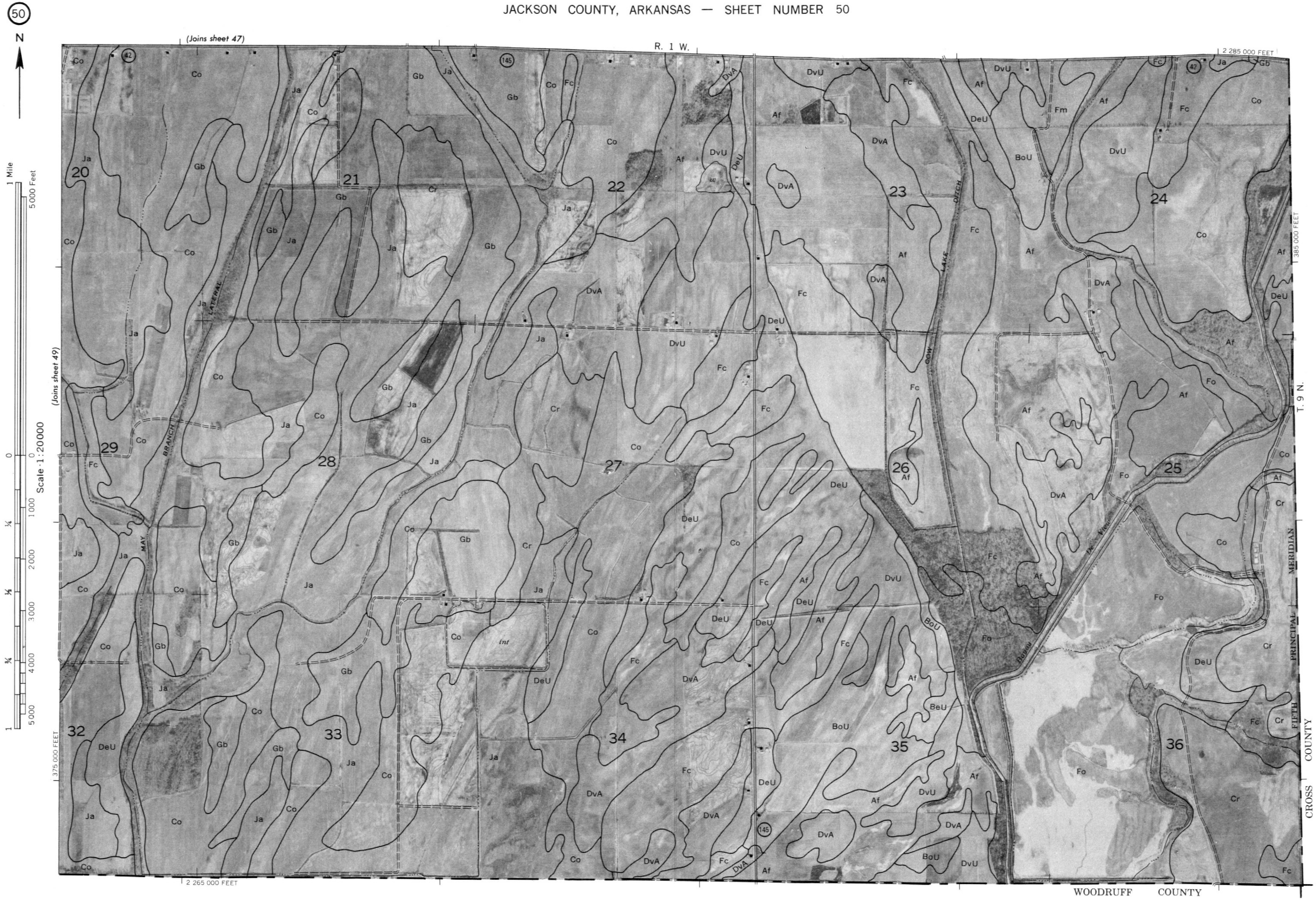
Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.
Land division corners are approximately positioned on this map.

JACKSON COUNTY, ARKANSAS — SHEET NUMBER 50



JACKSON COUNTY, ARKANSAS NO. 50

Land division corners are approximately positioned on this map.

Photobase from 1970 aerial photography. Positions of 5,000-foot grid ticks are approximate and based on the Arkansas coordinate system, north zone.

This map is one of a set compiled in 1972 as part of a soil survey by the United States Department of Agriculture, Soil Conservation Service, and the Arkansas Agricultural Experiment Station.